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THE AMERICAN GAS LIGHT JOURNAL

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THE WESTERN ASSOCIATION'S TIN WEDDING.

Having attended the above named tin wedding, we suppose it is only proper that we should report upon the looks of the matron, and we hereupon say that she is bounie, blithesome and bouncing; in fact that the lapse of years has but added to her attractions. The Eastern section of the visitors expected to be able to render this verdict, but were hardly prepared to be ushered into the ante-room, as it were, of the matron's household (located for the tin wedding occasion in St. Louis, Mo.) with such a grand accompaniment of lightning, thunder and rain. However, the Hartford gas oak (Jno. P., of course) decided that it should be accepted in proper spirit, and merely as a just tribute to the greatness of those who had traveled so far to pay their homage to the bride of a decade ago. Humphreys, more sedate, suggested that it might be a warning to those Easternites who had been coquetting with certain electric light suppliers, but had not yet bound the bargain, to complete the negotiations forthwith. Notwithstanding this difference of opinion no blows were struck, albeit some of the party managed to make very good time between the depot and the Southern Hotel. The headquarters already held a goodly delegation, and newcomers were constantly putting in an appearance. Shortly after 10 o'clock of the following day the visitors sought the hall of the Elks' Club, and when, in due time, President Fullagar called for order he had the pleasure of facing a royally good attendance, and Secretary Littleton, from his clerical position, smiled—he might as well have said, in so many words loudly spoken, "Didn't I tell you so?" Nevertheless, there was to be a drop of bitterness in the attendance cup, after all. It had been sadly and sorrowfully known that the chair so often occupied by the honored founder of the Association—the late Mr. J. O. King, of Jacksonville, Ills.—would be vacant, and forever so in the future gatherings of the body that he had so carefully fostered. But if dead to this life, he vigorously lives in the hearts and thoughts of those who now tread onwards to the heritage awaiting them. First the query was, "Where is Somerville?" Then rapidly came inquiry for Prof. Douglas, Ramsdell, Hyde, Sr., Butterworth, Bushnell, and others who were wont to gather for the fray. But time presses, and before we have realized it the tin wedding routine is fairly underway. The roll call published in our first installment of the official report will show that, even if some of the war horses were absent, many had responded to the call of duty, and further on the same pages will reveal the fact that others had journeyed from afar to commune with their fellows in mental and social siege. Denniston, of Pittsburgh, Pa.; Leach, of Taunton, Mass.; Humphreys, of Lawrence, Mass.; Sherman, of New Haven, Conn.; and Capt. White, of New York—in regard to the latter many regretted that he failed to bring on his army mule, but was forgiven when he (the Cap.) explained that the "mule" had been accidentally killed in Cincinnati, shortly after the conclusion of the recent banquet in that city to its members and guests by the Ohio Commandery Military Order of the Loyal Legion. Some surprise was excited by the fact that Associate Member J. J. Griffin, of the Quaker City, seemed to have reached that stage in his career where the services and influence of a minister of the Gospel were needed to keep him in the way that is straight, although rugged and narrow is the path thereto and thereof. President Fullagar's address beyond doubt possesses that merit which is supposed to comprise

the soul of wit, but he nevertheless managed to touch upon those questions that appeal most forcibly to the gas maker of to-day. Some of his hints are well worth thinking over, particularly those in regard to the "rounding up" of ideas, to the end that all may enlarge the dimensions of the corral which contains their information fund. Our impressions in respect of the exceeding great value to be gained by membership in gas associations have been so often asserted that we opine that all will take for granted we are firm believers in their efficacy and worth as agents for the distillation and dissemination of useful gaseous information. President Fullagar evidently does not fear greatly either electric light or natural gas; and we presume that if every gas engineer could count readily and surely upon the tactical services of a Hickenlooper, why, all would say, "Amen!" The trouble is, men of that caliber are not in great profusion, more's the pity, too. Electric light certainly presents a pretty strong front just now, and a prudent soldier always provides an avenue of escape—open at both ends, if possible, but never hermetically sealed in the rear. Two items in the President's address seem to be somewhat conflicting. He refers to the great saving in labor that can be effected (in works of a certain capacity) by the use of stoking machines—in fact instances something like a saving of 20 per cent. accruing from them in the operation of drawing by their aid. No doubt that is so; but if in their present crude (so-to-speak) condition stoking machines have developed that advance, inventors ought surely to be able to so perfect them as to perhaps quadruple their efficiency. The principle being there the practice ought to speedily outstrip the original idea. But turning aside from that, Mr. Fullagar suddenly suggests that "in *all* large plants water gas, in connection with coal gas, is very desirable, for two excellent reasons. First, as an enricher; secondly, as an instrument of moral suasion to be used upon workmen in allopathic doses." Leaving aside the fact that we know of several large plants to-day under the control of men thoroughly abreast of the times in the principle and practice of their profession, in which it is unlikely that water gas (at least in its present developmental stage) will ever be manufactured, simply because the manufacture and sale of coal gas is the more profitable course to pursue, we fail decidedly to note the advantage to be gained in distributing a water-gas-enriched coal gas. Least of all do we discern the advantage if you care anything for the wishes of your consumers. No; it must be either coal gas or water gas—the two cannot be satisfactorily wedded. And if President Fullagar wishes to hold his workmen in check let him keep on developing the opportunities presented in mechanical stoking. Another thing that has been aired somewhat extensively of late is the contumely to which those *engineers* and *superintendents* who spoke favorably of water gas were subjected in the past. Those who make such assertions seem to us to be wide of the mark; and perhaps we are qualified to speak thereon, since we caught an occasional glimpse of the battle. Those who sought by piratical practices to foist their "systems" on the owners of plants who refused to purchase the "patent rights" of the despoilers were the parties contemned, and whose wretched rapacity ought not to be condoned. If these things are to be publicly alluded to they should be mentioned as they were. Water gas engineers, in their province as members of the craft, have never been assailed. Some of their employers were, and richly the latter deserved everything that was said of them.

Secretary Littleton, it may be remembered, was at one time somewhat dubious in respect of the threatened paucity of papers; but a fairly good return was made. Papers were read on "An American Gas Institute," by F. Egner; "Improved Gas Burners," by T. A. Cosgrove; "Distillation of Coal," by J. Gimper; "The Rule of Inverse Squares," by B. E. Chollar; "Furnishing Gas without a Holder," by J. W. Dunbar; and two informal communications—one entitled, "Jottings from Rome, Italy," by E. Schinrock; the other being "A Fraternal Letter," from R. Spencer—were received. In connection with the future presentation of papers to the Western Association, a resolution intended to comport with the present practice of the American and Ohio Associations was passed which authorizes a special committee —to consist of the President, Vice-Presidents and Secretary—to designate subjects for particular members to descant upon. The paper that—and properly, too—received the greatest measure of attention was the one by Mr. Egner. In his usual lucid and entertaining style he placed the subject matter of his theme before the audience, and we sincerely hope that the special committee now in charge of the Egner proposition will report (next year in Chicago) that the foundation stone has been safely laid. The project is a huge one, but its possibilities are simply grand. One of the features of the gathering was the excellent work done by the special committees. Particularly do we ask that one of two of the recommendations in the Committee on President's Address be carefully studied. Our official report will, however, contain an account of all the technical and routine business transacted at the convention, and we here take leave of that portion of the subject with the remark that Littleton's early fears were groundless.

It is a long time since the banquet table at the Southern was so spread and swept—which operations were conducted, one in elegance and profusion, the other with surprising cleanness—only one shadow obtruding its gloom over the—if we may hint at it—later hours. This was a partial sorrow that the Captain's mule had laid down its life at Cincinnati; for had the mule been quartered in the Southern Hotel stables, some of those behind the draperies would undoubtedly have directed it (the mule) to the rear, perhaps to the front, of a gentleman from the Quaker City unattended by a clerical chaperone. The banquet was a success—beautiful in arrangement, and heartily enjoyed.

The third day was "one continual round of pleasure." During the time of being spreadeagled up and down the noble bosom of the Father of Waters (between the Laclede gas works and the Western Steel Company's plant), the land trip in carriages to the magnificent grounds and buildings of the Jockey Club, where a—lunch, the Committee called it—superb course dinner was served, until the conveyances once again landed their passengers at the Southern's steps, the sightseers experienced nothing but enjoyment, which also enabled them to form some idea of the weight of the labor of love that had been carried on the shoulders of the local Committee of Arrangements. Messrs. Green, Thompson and Russell quite likely bore the brunt of the burden; but if appreciation of their efforts is to be reckoned as the price of success, the smiling countenances—likewise the appetites—of those whom they entertained in so royal a manner were everywhere to be seen. Therefore, be it resolved, That the tin wedding was all that any matron might wish for.

THE FIRST VERDICT RENDERED BY THE MASSACHUSETTS GAS COMMISSION.

We believe that one of the leading arguments advanced by the opponents of a Gas Commission for the State of Massachusetts was that the Commissioners would likely be in danger of finding out how great was the weight of idle time when the hours hung heavily from their hands. Perhaps that might safely be regarded as, at worst or best, merely an innocuous objection, since such a state of affairs would pretty conclusively show that Massachusetts gas affairs had been conducted in accordance with fair if not liberal business policy. Be that as it may, we hardly think the former plea would be offered now in opposition, for the Commissioners have been obliged to support the burden of duty on the tops of their palms instead of allowing it to depend from the tips of their fingers—in the nature of a dead weight.

Several allusions have been made in our columns to the hearing that had taken place before the Commissioners, when sitting in Worcester as a quasi-court to determine the merits of the case submitted by some of that city's gas consumers against the local gas company. The Commissioners began the hearing on Feb. 12, sitting at weekly intervals of two or three day sessions, the testimony and arguments being all in on date of March 19. The testimony, aside from certain irrelevant features, was of an interesting character; in fact, at times, varied betwixt the pitch of solid fact and the most nonsensical bombast. The judges, however, took the papers, and after something like nine weeks of sifting and comparison handed down their decision on Saturday, May 14. The report, which is quite lengthy, goes to the marrow of the case, and, if there ever were any reason to believe that the Commission would slight its office, the fairness of the first presentment must go a long way towards putting at rest even the ghost of such suspicion. The Worcester Company entered court with a not over good case. The burden of the complaint was that an adequate supply of gas could not be obtained from the Company, the secondary objection being a paucity of illuminating power in the quantity that was obtainable, a third cause of demur being grounded on an alleged excessive sales rate. The middle objection was easily disproved, and the last was fairly open to debate. In regard to the first objection, however, the complainant's case was almost impregnable. The Worcester Company's district is quite compact, but presents some wavy ridges of territory so baneful to the gas engineer in his distribution policy; nevertheless an inspection of the following statistics will, we submit, go to prove that the proprietors of the Company were amiss in their management of distribution facilities. In 1886 the total accounted-for sendout aggregated, in round numbers, 81,809,000 cubic feet, which was passed through a main system, including pipes of all diameters, whose total length is returned at 29½ miles, and the consumers averaged out at 110.9 to the mile of main. An analysis of the diameter and length of the respective main sizes in use reveals the following:

One inch, 11,688 ft.; 1¼ in., 1,366 ft.; 1½ in., 3,458 ft.; 2 in., 3,892 ft.; 3 in., 73,795 ft.; 4 in., 43,699 ft.; 6 in., 4,085 ft.; 8 in., 6,420 ft.; 10 in., 536 ft.; 16 in., 3,881 ft.

The Commission very properly recommends that this state of affairs be remedied, and the Company acquiesces in the suggestion, as also in agreeing to fix the rate for gas at the figure suggested by the Commission, the reduction being noted in our item columns. There are many timely hints contained in the report, and we are glad to note that the examiners do justice to Brother Rollins, for they say they are "convinced that the manufacture of gas is under the charge of an efficient and competent gas engineer," thus placing the blame for inertness or indifference to the credit of those who ought to bear the weight. The inevitable conclusion in the Worcester case is that the Commissioners have performed their whole duty in the premises with equable exactness.

[Official Report.]

Tenth Annual Meeting of the Western Gas Association.

Held at St. Louis, Mo., May 11, 12 and 13, 1887.

First Day—Morning Session—May 11.

The members of the Western Gas Association, convened in Tenth Annual Session, assembled in force at the lodge room of the Elks' Club (corner Sixth and Walnut streets, St. Louis, Mo.), on the hour appointed for the formal opening—10 A.M., Wednesday, May 11. President Fullagar called the Association to order, and Secretary Littleton occupied the recorder's chair.

Roll Call.

The following delegates responded to their names:

Honorary Members.

Harbison, J. P., Hartford, Conn.
Thomas, Jos. R., New York.

Active Members.

Ambrose, J. S., Springfield, Mo.
Averill, A. T., Cedar Rapids, Ia.
Barret, A. H., Louisville, Ky.
Baxter, I. C., Evansville, Ind.
Bixby, W. A., Galena, Ills.
Chollar, B. E., Topeka, Kan.
Clarke, H. E., Kansas City, Mo.
Cosgrove, T. A., Evanston, Ill.
Coverdale, R. T., Cincinnati, O.
Cowdery, E. G., Milwaukee, Wis.
Critchlow, J. M., Beaver Falls, Pa.
Davidson, J. M., Marshall, Mo.
Davis, D., Iowa City, Ia.
Dickey, R. B., Lexington, Mo.
Egner, F., St. Louis, Mo.
Elbert, V. L., Minneapolis, Minn.
Fullagar, John, Cincinnati, O.
Gimper, John, Leavenworth, Kan.
Harris, G. S., Mansfield, O.
Henning, D., Chicago, Ill.
Howard, J. B., Dubuque, Ia.
Hart, M. S., Las Vegas, N. M.
Jenkins, E. H., Columbus, Ga.
Johnson, J. H., St. Louis, Mo.
Johnston, R. C., Lawrence, Kan.
Kennedy, J. M., Rockford, Ill.
King, E. J., Jacksonville, Ill.
Knight, C. S., Fort Wayne, Ind.
Lansden, T. G., Washington, D. C.
Lindsley, E., Cleveland, O.
Littleton, A. W., Quincy, Ill.
McMillin, E., Columbus, Ohio.
Montgomery, James, Sedalia, Mo.
Murdock, Geo. T., Elkhart, Ind.
Murphy, J. M., Chicago, Ills.
Odiorne, W. H., Springfield, Ill.
Page, Geo. S., New York, N. Y.
Pratt, Henry, Chicago, Ills.
Schuster, Paul F., Rockford, Ills.
Scofield, L. K., Fort Scott, Kan.
Shreve, C. D., Marshalltown, Ia.
Smedberg, J. R., Baltimore, Md.
Stanbery, F. H., Pekin, Ills.
Starr, E. M., Richmond, Ind.
Tayler, Geo. H., Warren, O.
Taylor, Thos. E., St. Louis, Mo.
Keller, C. M., Columbus, Ind.
Thompson, J. D., St. Louis, Mo.
Watts, S., St. Louis, Mo.
Wirt, R. D., Independence, Mo.

Associate Members.

Babcock, H. C., St. Louis, Mo.
Bradley, C. D., Chicago, Ills.
Connelly, T. E., New York, N. Y.
Cressler, A. D., Fort Wayne, Ind.
Daniels, Jas., St. Louis, Mo.
Delano, O. D., St. Louis, Mo.
Dell, John, St. Louis, Mo.
Dickey, C. H., Baltimore, Md.
Goodwin, W. W., Phila., Pa.
Graeff, G. W., Jr., Phila., Pa.
Green. Jas., St. Louis, Mo.
Griffin, J. J., Phila., Pa.
Harper, H. D., Chicago, Ills.
Harris, Jos. A., Phila., Pa.
Hauk, C. D., Chicago, Ills.
Hicks, Geo. C., Chicago, Ills.
Howard, E. T., St. Louis, Mo.
Howard, L. J., St. Louis, Mo.
Howell, W. S., Cincinnati, O.
McClary, N. A., Chicago, Ills.
McDonald, W., Albany, N. Y.
McIlhenny, John, Phila., Pa.
Persons, F. R., Chicago, Ills.
Ranshaw, H., Cincinnati, O.
Roots, D. T., Connersville, Ind.
Russell, D. R., St. Louis, Mo.
Russell, T. G., St. Louis, Mo.
Stacey, Wm., Cincinnati, O.
Stout, John, Chicago, Ills.
Wolfe, L. J., Chicago, Ills.

The minutes of the Ninth Annual Meeting, as published in the American Gas Light Journal, were approved.

PRESIDENT'S ADDRESS.

President Fullagar now read the following inaugural address:

Gentlemen:—It is my pleasant duty to welcome you to this our Tenth Annual Meeting, and to congratulate you upon the general prosperity found prevailing in every branch of the manufacturing enterprise in which this Association is so important a factor.

The character of this Assembly makes attendance at our meetings not only a business duty but a social pleasure; and while we enrich our stores of practical information, by a free interchange of opinions based upon experience, we incidentally and purposely illustrate the social side of our dispositions, and also tickle our somewhat neglected palates with the fruits and sweets provided by nature for the deserving.

The only feature of this organization that fails to meet with my approval is the fact that we meet but once a year. "Like seeks like," and, therefore, do minds trained in the same line desire to occasionally "rub against each other," confident of finding not only valuable suggestions of a practical nature, but constant interchange of congenial ideas.

We meet after twelve months of labor that, no doubt, taught us many new facts; and it is the mutual exchange of these facts that makes this Association of so great importance. In this general expression of ideas it becomes the duty of every member to contribute his unit of information, so that, in the end, we may be in positive possession of all that is good, and so stand on logical basis, having discarded that which is bad.

In this "rounding up" of ideas no doubt many pet theories will have been exploded, and perhaps some sore spots exposed, but the healing balance that comes from intelligent discussion, supplemented by practical application, more than suffices to ease the injuries inflicted. While some of us may go from here far from being convinced that our pet hobbies can find no resting place in sound reason, and with our minds correspondingly depressed thereat, yet being conscious that "pigheadedness" is not one of our faults, are certain that the bud of reason here implanted will, in the course of time, ripen into the rose of positive conviction. Conservatism may be a great virtue in most affairs of life, but when it comes to the development of the gas industry it can find no abiding place. With us it has been, and in all probability will continue to be, an aggressive fight for economical improvements.

We miss to-day from our ranks the presence of a gentleman who, aside from his great worth as an earnest worker for our cause, was beloved by us for his many manly virtues. I need hardly say to you that I allude to our lamented friend and brother, the late Mr. J. O. King, of Jacksonville, Ills., whom the great reaper took from us since our last meeting. To others who well knew Mr. King's merits will be intrusted the sad duty of preparing a minute to his memory on behalf of this Association.

This, our Tenth Annual Meeting, is very appropriately held in the city of St. Louis, where, a decade ago, the Western Gas Light Association first sprang into existence. As an infant it was strong and healthy, and the development of its matured years has demonstrated the wisdom of its projectors. It has enabled us, in many instances, to concentrate intelligent action, where, had we no organization, our forces would have been widely scattered, and our time and money correspondingly wasted.

It has created a brotherhood which binds us in pleasant social tethers; that has enlarged the horizon of our reasoning faculties; that has broadened our business intellect; and that has served as a willing wet nurse to our pocketbooks.

The year that has elapsed since last we met was not very fruitful of improvement in the manufacture of gas, but nevertheless since the formation of this Association the improvements in our special field have been numerous and valuable. It may not be inappropriate at this, which may be called our tin wedding, to make brief reference to some of the past advances. Regenerator furnaces have not only done away with much of the stoker's hardest labors, but have increased the given production of benches over the old method in the proportion expressed by 90:55. Again, the improved furnaces have made a saving in fuel of 25 per cent. over the old method.

During the period of our existence as an Association stoking machines have been introduced, and are in successful operation in six of the large cities of this country. They have caused us a saving of full 20 per cent. over hand drawing. They could be successfully and economically operated in any works using over six benches.

Ten years ago we used no agent save lime for the purpose of purification, which cost us three cents for every thousand feet of gas; but now, with oxide of iron as a purifying agent, we save five-sixths of the named cost. Ten years ago water gas was a comparatively unknown quantity, and any gas engineer or manager who had the temerity to speak respectfully of it was liable to meet with mental if not bodily chastisement; to-day, in all large plants, water gas, in connection with coal gas, is very desirable, for two excellent reasons. First, as an enricher; secondly, as an instrument of moral suasion to be used upon workmen in allopathic doses. It is very effective in both cases.

Ten years ago the gas fraternity was much exercised over the discoveries of the sage of Menlo Park; to-day we can see how idle were our fears. The electric light has proved to be a beneficial boomerang to the gas fraternity in that, instead of inflicting permanent wounds upon our body, has, as we well know, been of material service to us in increasing our gas consumption. Anything that has a tendency to make greater the demand for light must of necessity be beneficial to those interested in the standard illuminant—gas.

Of late we have heard and read of natural gas, at first with some quakings; but, it having been fully established that to enrich the natural article sufficiently to class it among the illuminators requires an expenditure greater than that requisite in the manufacture of coal gas, our quakings immediately disappeared.

A question now facing the gas fraternity, and one of vast importance, is the matter of Gas Commissions. It is a melancholy fact that the great bulk of the people of all cities and towns do not regard the gas companies of their respective places of residence in the kindest light, and municipal governing boards who look upon gas companies as their legitimate prey, do not hesitate to act accordingly.

The general outcry against gas companies arises from one of several causes. First, the desire that most people possess of obtaining something for nothing; secondly, the neglect on the part of the consumers, through ignorance, to regulate consumption; and third, the natural tendency of most well-developed Americans to indulge in what is generally termed a "grand kick." I believe that the first and last causes assigned will cover 99-100 of all objections made to gas bills. While the causes may be deemed light, yet it is not unreasonable to state them as I have. Now, whether it is best to permit the present outcry to continue, and to submit to all the petty annoyances of local politicians, as in the past, or to face a new and untried commission that will, of necessity, be of a political nature, is what the gas fraternity must decide between.

But, gentlemen, I will not detain you by a detailed or lengthy reference to any subject, leaving your superior judgment to determine what is best to discuss. It is my earnest hope that the business which is to follow shall be conducted on the high plane that has ever been characteristic of the deliberations of this Association.

Committee on President's Address.

On motion of Mr. E. McMillin, the Secretary appointed Messrs. E. McMillin, E. J. King and J. B. Howard, as a Committee to consider the President's Address, and to report their conclusions thereon at a subsequent session of the meeting.

Introducing the Visitors.

On motion of Mr. E. J. King, the President appointed Messrs. King and J. B. Howard a Committee to welcome and introduce to the Association those of the fraternity from other Associations who had in person responded to the invitations sent out by Secretary Littleton. In due time the Committee reappeared, accompanied by the following guests:

Mr. C. J. R. Humphreys (Secretary American Gas Light Association), Lawrence, Mass.; Mr. W. H. Denniston, Pittsburgh, Pa.; Mr. F. C. Sherman, New Haven, Conn.; and Mr. H. B. Leach, Taunton, Mass. The guests were greeted in most hearty fashion. The President formally welcomed the visitors, introduced them to the delegates, and invited them to take part in the proceedings.

Some Communications.

The Secretary read a letter, from Mr. Jos. Specht, President of the "Famous Shoe and Clothing Company," of St. Louis, Mo., inviting the Association to visit the warerooms of the Company. As a reason for the invitation Mr. Specht explained that the business home of his Company (located at Broadway and Morgan streets) had been formerly lighted by arc lights, but that the latter had been superseded by the improved lamps of the Siemens-Lungren Company—95 of which were now in use. To quote a paragraph of Mr. Specht's invitation, which read, "I think that every gas manufacturer visiting the city of St. Louis at this time is much interested in this (Siemens-Lungren) lamp, for it will, for many and potent reasons, supplant much of the electric light used throughout the country." The invitation, on motion of Mr. Howard, was accepted.

The Secretary also read a letter, signed by Mr. Geo. W. Graeff, Jr., which asked that "the proceedings of the coming annual meeting of your Association be furnished to such journals as may desire them for publication," etc. Mr. Graeff's communication was referred, under Art. VII. of the by-laws, to the Board of Directors, who were instructed to report their recommendation thereon at the afternoon meeting.

Letters of Regret, Etc.

Secretary Littleton here read letters, from Messrs. C. F. Prichard, Lynn, Mass.; Eugene Vanderpool, Newark, N. J.; A. M. Norton, Nashua, N. H.; Geo. G. Ramsdell, Vincennes, Ind.; C. H. Nettleton, Birmingham, Conn.; M. S. Greenough, Boston, Mass.; and G. A. McIlhenny, of Washington, D. C., regretting the inability of the writers to be present at the Convention.

Reading the Papers.

The President—Preliminary routine business having been completed, I will introduce Mr. Frederic Egner, of St. Louis, Mo., who will read his paper on—

AN AMERICAN GAS INSTITUTE.

Mr. Egner read the following:

The matter about which this paper treats, "An American Gas Institute," deals with what at this time is yet an "unborn institution;" but it is hoped that the placing before you now of the idea leading thereto may lead to the introduction of measures that shall insure its establishment at an early date. Do not, however, expect to hear anything strikingly original in my presentation of the matter, for is it not written in the ancient book that "There is nothing new under the sun?" Each and everyone of the gas managers present has his own idea as to the best way of carrying on the business of gas making, and not unlikely nearly (if not quite) all are right in their views—although these may differ, if compared directly; for we must remember that the prevalent conditions at Cincinnati, Ohio, are not precisely similar to those which obtain at Denver, Colorado. Further, at Cairo, Ills., we may advantageously do that which would prove at Lima, Ohio, to be decidedly in the line of poor policy; in other words, local circumstances and varying conditions must, and do, govern the operations of the gas maker. Hence, even though you concede that "Like causes produce like results"—to which axiom, in the case of the gas maker at least, we must for security's sake add the words, "Under like conditions"—it is only fair to assume that each gas man here to-day understands his business better than any other one could teach him—as applied to his particular location or section of the country. Therefore, keeping all these facts in mind, it has been the object of the writer not to attempt to show you the best way to keep your stand-pipes clear, nor to estimate how much air you may safely mix with your gas, nor yet to descant upon the relative merits of oxide of iron or lime as agents for the purification of gas—because I take it for granted that you are all familiar with these different branches of your art—but I do seek to present to you something that may interest and benefit all, be they visitors from Maine, or members from Texas or California.

The title of the paper may have aroused some speculation as to what this proposed "American Gas Institute" is to be like. What is to be its object or use? What need is there for such an institution? and how much will it cost?

In response to the first of these implied questions, the following explanation is submitted: The American Gas Institute is to be a federation of all the gas companies, or their legal representatives, in the United States—or, for that matter, in America—or as many of these as may be induced to subscribe to the furnishing of the means necessary for the formation and subsequent support of the institution, which preliminary details will meet with a fuller description further on.

The object of this federation or society would be (first) for mutual aid and protection against unfair competion—not *just* competition, mind you; but unfair competition, which, in some instances has degenerated into downright (though legalized) robbery; a highway sort of process, of the meahest order, too, for while it destroyed either wholly or partially the property of the wealthy stockholders, it also swept away the small savings of the thrifty, though poor, shareholder. Further, that pillage has not acted beneficially to the general public, or those not interested pecuniarily in the shares at all; but, on the contrary, the general public have also felt the sting of the marauder's lash.

It seems to me it would be a waste of your time and mine to quote examples in support of the truth of these statements; and so, let us pass on to a second portion of the object of this proposed federation of the gas companies. The second item would be the creation and support of a bureau to gather and furnish to all subscribers general information regarding matters relating to old or new processes or apparatus employed or designed to be employed in any branch of the manufacture, distribution and use of gas for either light, heat or power. To more especially exert a watchful eye over the field of invention; to investigate, and, if possible, to try, all alleged improvements; to sift out and separate the true from the spurious; to report freely all genuine progress to its members; and to warn them against fictitious, impracticable, or otherwise undesirable contrivances, whether in principle or process of manufacture. It may be stated, on good authority, too, that the railroad companies of this country, although their individual interests as separate companies are not unfrequently in direct opposition to one another, for years have had such an organization imbued with the relative object stated in the second place herein—viz., to aid really meritorious inventions, and to discountenance error or fraud.

As has been indicated, mutual protection is the foundation stone upon which the whole plan is sought to be based. "In union there is strength" is an old, tried, and truthful lesson, and it would be well for us to heed its teachings, and to apply them to our own case ere the date available for their employment has passed away. There can no longer be any doubt that had the gas companies years ago acted together in unison or consort millions upon millions of dollars would have been saved their stockholders, and the selling price of gas would, generally, be less than that which rules to-day.

And now we may consider the necessity of or for the proposed organization in relation to the field of invention. This interference can best

be understood by a reference to the records of the United States Patent Office. Indeed, the careful investigator would find, after a search that need not be too searching, himself in thorough accord with the saying that there is nothing new under the sun—in the line of gas generating apparatus or devices—except he took refuge in the belief that a series of "new" combinations, based on old, well-known, and generally understood principles, constituted "new discoveries." Despite the seemingly endless and exhaustive list already on the records, we are confronted with the hard fact that scarcely a week goes by in which one or more "new processes" are not annexed in the archives to those already born, nay, "hoary with the rime of years," and heralded as the primal scions of a new race. Again, each week may be trusted to add largely to those vagaries of the inventor's brain which, not aspiring to the dignity of being proclaimed as "new principles," modestly shrink behind a garb labeled, "improvements to apparatus."

To assert that all these alleged inventions were valuable, or in fact constituted any improvement over preceding methods, would be wild, wholesale exaggeration; but, on the other hand, to say that none possessed merit would be most unjust; and yet it is a fact that all meritorious inventions do *not*, at least at first, succeed. They may attract passing notice and then be forgotten, to the manifest injury of true progress. They may be re-invented long years after their original appearance, and their resurrection be attended with happy results. An example of this sort is instanced in the compound engine of the present day, which was proposed by Watts and others of his day and generation. Of course it is easy to see how such original failure may be caused. The inventor may have been a poor struggler against the tide of adverse fortune who, becoming gradually disheartened, will let—because he was obliged by circumstances—the matter drop. But in that event the business or process that would have been benefited in the successful development or fruition of the toiler's attempt sustains a certain loss, and possibly receives a serious blow, from which it may not recover for years. Perhaps, also, that loss may never have been realized or appreciated subsequently.

Nor do all imaginary improvements, on the other hand, fail to find a market—for a time. During their brief hour of exposition the investors beguiled into attempting to reap profit from their development receive the only recompense that is subsequently to pay them for the conviction that they were deceived and swindled. Now if the "invention" happened to be in the line of a gas process, the action of the bureau attached to the proposed gas institute would go far toward protecting the manufacturers—the people financially interested—from worry and loss.

As an example of one of these deceptive "processes" a certain "oil, air and water gas system" is cited, which was fully described in the AMERICAN GAS LIGHT JOURNAL, on two distinct occasions. The first reference (see JOURNAL, April 2, 1884) dealt with the process as it was claimed to exist and act by the inventor, but the second mention (see JOURNAL, Aug. 17, 1885) disclosed the process as it was found to be from the result obtained in a careful trial by a gas man. That particular process was heralded by its promoters as likely to be equal to the task of supplying nothing less than the long-sought-for "gas of the future," and notwithstanding the self-evident folly of the method followed—that of running oil and a little water into a red-hot iron retort, made carefully air-tight, air then being pumped into the retort by means of an air pump—the invention found some very respectable indorsers, who upheld it until its inutility was proven beyond reasonable doubt to the parties most interested—the purchasers of the patents. It might be further explained, as another "qualifying" circumstance which clouded the "complete originality" of the "invention" that the apparatus and process were the exact counterparts of a plan patented years before by an Englishman who resided in New Zealand. But to come back to the disgusted proprietors who purchased the "inventor's rights."

Did these people drop the matter then and there? Oh, no! Not desiring to lose what money they had invested, the "principle" was revamped, and another patent—based principally on misrepresentation—was granted them. Armed with this document they took in one or more "green" partners, started in under new management, with a new name, of course, and the "right to use the process" is actually being offered for sale, particularly in the Western States.

A further argument in favor of the establishment of an institution like the one proposed is to be found in the apparent uncertainty surrounding the results said to be obtained in the manufacture of water gas as produced by means of well-known systems and apparatus. Would it not be better for all gas engineers (and gas proprietors) to know that, with a stated quantity of oil of known specific gravity, and with the use of just so many pounds of coal or coke, a certain result in cubic feet of a gas of known illuminating power could be depended on? The various water gas machines are now made so nearly perfect that it seems strange there still should be so much controversy as to the actual results, and hence that the value of these processes still must remain a subject for hesitancy and doubt on the part of many owners of gas works. Could all these matters be settled beyond reasonable doubt by reference to some accepted authority proprietors of gas works would be in position to decide and act in regard to the claims of inventors; and that opportunity would be afforded by the working of the proposed gas institute.

It is true that a number of societies, similar in purpose to the Western Gas Association, are in existence, and that their prime object is to disseminate and promote knowledge necessary to enable their members to cheapen and improve the manufacture of the commodity that we distribute; but no society composed of individuals could reasonably expect to successfully carry on the work that needs to be done. This requires the action of a legally organized body comprising the corporations interested, which necessarily would involve a more liberal expenditure for its support than could be ordinarily expected or exacted from individuals.

If the American Gas Institute were ever to become a fixed fact, in the shape of a real, live institution, it should have an office at Washington, D. C., so as to be convenient to the records of the U. S. Patent Office; and it should also have an understanding with the proprietors of some convenient gas company at whose works might be obtained those appliances necessary to carry on any desired experimentation—of course, that accommodation to be liberally paid for by the institute. Of course, such an arrangement might be trusted to materially reduce the expense for experimenting, as you will see upon slight reflection, and without any further hint from the writer. It is not necessary, in order to try an invention on its merits, to purchase the same; and it will be time enough to buy it when, having decided as to its availability, you have determined to practically employ it. No straightforward inventor would refuse an appeal for the privilege of testing the child of his genius; quite the contrary, he would welcome the opportunity. In regard to the other class (the frauds), their objections would prove valueless, for in exposing their humbuggery we strip them of their power for mischief in the future.

The composition of the institute might be arranged about in accordance with the following: The gas companies subscribing to the support of the institute could annually elect a board of trustees, the ballot to be made by means of a letter vote addressed to the President of the body. The board so elected could subsequently meet and elect a President, an Executive committee, and such other officers as might be determined were necessary to the proper control of the body. The President, Trustees and Executive Committee should serve without compensation, save in the matter of moneys actually expended in traveling, etc., during time of attending the meetings. The Trustees should be empowered to decide the policy of the organization, and to lay out the work, while the Executive Committee should be the active force for carrying out this policy whenever or wherever required. Then a practical as well as theoretical gas engineer should be selected to take charge of the permanent business and office of the Association, at Washington. This officer should be appointed for life, and ought to receive a liberal salary, in order to remove him as far as possible from the temptation to serve other interests than those whose advantage he was retained to guard. If, however, it was suspected that he had neglected his duties, was incompetent, or wilfully misrepresented any matter that he had been called upon to investigate, he should be made the subject of charges to be brought against him officially by the President; the trial court to be composed of the Board of Trustees, or the Executive Committee, or both. If a verdict of guilty were returned the offender should be dismissed, and the facts of the trial and punishment be published to the fraternity of the country. This would provide a double safeguard—not, of course, needed for the hedging in of an honest man—which, in the hour of temptation, even a desperate man would scarcely dare to break through. Thus the subscribing companies might be sure of thoroughly reliable information anent the value of all new inventions, and the officer might, during lulls in the whirl of invention, devote his time to the investigation of older—either active or dormant—subjects, to the manifest benefit of all concerned.

This Chief Engineer should be given the right to employ whatever assistants he deemed necessary, and he should be untrammeled in the right to elect or dismiss these subordinates, to the end that he be held completely responsible for their conduct.

To go at greater length into the routine organization details would no doubt be tedious—indeed, uncalled for—at this stage of the proposition; but the outline so far advanced I deem to be sufficient to prove that such a plan would enable the different gas companies to keep informed about the value of all new (and many old) inventions; and would cause them not only to keep up with, but really to assist, true progress in the science of gas manufacture and gas consumption. This—which was named as

the second of the objects for founding the institute—ought in reality to be the first argument in favor of the organization. It would at once bring all the interested parties closer together, and *keep them so*—having a common object.

The relative cost of maintaining such an institution would be but a trifle, were all to join in the cause. In fact the assessment would not exceed—perhaps not even reach—one mill on each thousand cubic feet of gas sold by each company for illuminating purposes.

Let us examine one or two instances. A company selling five millions cubic feet per year, at the assessment rate proposed, would be called on to pay $5—not an amount greatly in excess of what is paid for the average village weekly paper; and a company like the great "Consolidated," of New York city, would be assessed but $1,250 for the twelvemonth. Neither of these could secure like benefits for a sum anywhere near so small. And yet, at that rate of tax per thousand sold, the income of the institute would be over $24,000 per annum, exclusive of what those companies, which sold less than five millions cubic feet per annum, might contribute, also excluding natural or purely oil gas companies. However, united (or nearly so) action is necessary to secure the full value of the protective feature of the organization. Without enlarging on this now, it is safe to say that it is a matter which seriously interests all—great and small—gas companies alike. If you delude yourself with such selfishly constituted arguments as, "We are too great and powerful to be troubled;" "our charter is too strong;" "we are too insignificant;" or, "we, having coal and water gas processes, can defy all;" it is more than likely that you will find representatives right now in this meeting room who could, if they chose to relate their experiences, show the practical weakness of all your arguments, and prove to you—let it be repeated—that only in union can be found perfect strength.

Mine is not an argument for either coal or water gas, which you will readily concede; it is an argument for union, for self-preservation, for the protection of the interests of our stockholders, who have intrusted us with their money and the conduct of their business. But, as everybody's business is said to be nobody's business, one waits for the other. At best nothing is done, but in the meanwhile we are being swallowed up one by one, giving up, to soften the process of deglutition of your absorbers, sometimes as much as one-half of your property—simply because some one has had the courage or audacity to demand it from you with a threat.

Do not say, "We tried to unite before, but failed." "Try, try again," was one of schoolday rallying cries; and be assured that it is a good one for manhood's days. Let all put their shoulders to the wheel, for you are all interested; and, sooner or later, you will be caught in the toils of the adversary who spareth not—that is, if you do not help to push now. When you go home from here interest your directors and stockholders. Tell them the facts; and act! Push, and keep on pushing, this matter, and when it is fairly started keep on, so that we cannot only have—but also keep our "American Gas Institute."

Discussion.

The President—The paper is now before you for discussion, and I hope that it will be freely commented on.

Mr. McMillin—I am sorry that Mr. G. S. Page is not now present, for he knows more about this subject, perhaps, than any other member of this Association. He probably would tell us that he devoted six months of hard work, day and night, to an attempt to organize an institution like that suggested by Mr. Egner. In addition to his labor Mr. Page expended a good deal of money which has not yet been returned to him. Quite a number of others did a great deal in that same line. I recollect that I devoted a good many days and nights to a study of the problem. The question has been before the American Association for some years; and correspondence on the subject has been had with almost all the larger companies, and with a great many of the smaller ones, throughout the country. That body went so far at the Cincinnati meeting (Oct., 1885) as to secure a conference of those taking active part in the subject—then involving some 40 or 50 gas companies—and at that conference a committee of 13 was named and instructed to subsequently elaborate a plan for the organization of an institute. Each member of the committee was requested to prepare a paper illustrating his idea of the proper mode of accomplishing such end, then those papers were to be submitted to a sub-committee, and that sub-committee was to prepare a final report. The matter got as far as the sub-committee stage. I think a good many papers were presented, and the sub-committee, or a portion thereof, held a meeting, and subsequently called a general meeting of the committee of thirteen, to be convened at Springfield, Ohio, in the spring of 1886. The 13 failed to report at the designated time; perhaps three of the members reported. It was found that the nearer the work of the committee approached completion the greater was the opposition to the plan proposed. That plan went even further than that now suggested by Mr. Egner. He suggests levying a tax of a fraction of a cent per thousand cubic feet of output; but they permitted, if necessary, the levying of a tax of five cents per thousand. My company was at that time selling gas cheaper than any other company in the State, and although we did not fear opposition our directors unanimously agreed to favor the plan, notwithstanding it would bind us to pay over some $6,000 or $7,000 per annum, in case it were found necessary in any year to raise the maximum amount. But we did not expect it to become necessary, for we believed that the mere ability to raise so large a sum would obviate the necessity of any such levy. The very fact that we had it in our power to make such a levy would tend in a large measure to prevent raiding. I worked very enthusiastically and for a long time in developing that enterprise, and I would be glad now to see somebody else take it up and make a success of it; but I have lost faith in my ability to do anything in that line, and have also lost faith in the ability of the other gentlemen who then had it in charge to successfully carry out the plan proposed. Although, like Mr. Egner, I would be glad to see the thing tried, I have little faith that we shall succeed in establishing an institute of that kind. I anticipated, from the title of his paper, that he would propose to provide for an engineering school, or something of the kind, and that idea impressed me very favorably.

Mr. Boardman—I have been interested in this movement since its inception, or since I have been a member of the American Association, and have carried on considerable correspondence in our section of the country about it. I also took sufficient interest in it to prepare a plan on the outlines given by that committee of 13 (although I was not a member of it), and while preparing that plan it struck me we overstepped the objects we ought to have had in view. We were trying to create, at the very start, a perfected and full grown association, whereas we should, perhaps, have started with a single object, working up from that starting point, subsequently increasing the scope and influence of the project as it grew in years. It is a difficult matter to have anything perfect at the very start, and the greater the scope you try to cover at the start the more opposition you are likely to encounter. One of the chief features of that plan, and the one which met the greatest opposition, was the protective feature, under which unattacked companies were to be taxed to help support those companies that were being assailed. I think that was the rock on which we split. Mr. Egner has only incidentally referred to that feature; but he has considered in his paper the ground whereon most of the companies could come together, or where a start might profitably be made, thus leaving other and subsequent matters to be developed by the institute when in working shape. I think most of the companies here represented would be glad to contribute the small amount of money he speaks of for the dissemination of useful information with regard to new processes. On his plan I think we can all come together, and then if we find that further development is practicable it can be made. Not only are all companies interested in securing exact information with regard to new processes, new machinery, and things of that kind, but inventors themselves are also exceedingly interested in these very things. Those of us who are thinking about increasing the efficiency of our works, by putting in new appliances, would spend more time and give more thought to inventions which, when perfected and patented by their discoverers, we could thoroughly test in all their bearings, and, if found to be all that was claimed for them, their owners could say to the gas interest of the country that their plans had received the indorsement of the institute, and that indorsement would be of value to them and to ourselves. Many of us are not able to carry on such investigations, or to take the steps necessary to get out patents, or to properly advertise and induce other companies to try new processes or machinery; whereas many of us would be very glad to put our shoulders to the wheel and give it a good push if we could be sure of having these new processes or appliances properly tested. I think this point is one we should all consider, and I am heartily in favor of making another attempt to induce the gas companies to act together.

Mr. Thompson—As one of the committee of 13 I will verify the statement that the main consideration then proposed was to enable companies to successfully contend with opposition. The money raised was to be chiefly used for that purpose. That which Mr. Egner makes the chief point was only an incident of the plan then proposed—that of protection against fraudulent patentees. I believe the plan now proposed would meet with favor where the other was frowned upon, and I would like to see it attempted.

The President—Would it not be well to refer this paper to a committee, they to consider and report to us before final adjournment?

Mr. Egner—That was the object I had in presenting the paper. We

are all certainly interested in the matter, and I am satisfied the more the members think of it the more they will approve it. There are a great many things to be considered by such a committee. The incident mentioned in the paper refers to parties who tried to interest people ignorant about gas matters sufficiently to induce them to buy the patents. That practice is not felt so much in large cities as in smaller ones. If there had been an institute the thing could have been investigated and pronounced upon by a competent official. If these investors were posted they would not have parted with their money. The project is not an expensive one, and reflection, I think, will convince you that the money will have been profitably disbursed.

[On motion of Mr. Pratt, the paper was referred to a committee of three (Messrs. Pratt, Egner and E. McMillin), who were instructed to report on the following morning.]

Mr. McMillin—I am sorry that I have been appointed on that committee, for I really feel disheartened at the prospect, judging from the fate of the committee of 13. Messrs. Boardman and Thompson are under the impression that the defensive feature was the *prominent* one in our former attempt, but I think its seeming prominence was due to the fact that it caused dissension. In fact the paper that was finally agreed upon by the sub-committee put very much more stress upon the testing of inventions and processes, and similar objects, than upon the protective feature. I think, however, that the disagreement generally attached to the protection feature, and in regard to those eligible for membership. Companies with fights already on hand of course could not be taken in. As to how (provided they would) we should come in—whether on the basis of capital stock, or the amount of gas made or sold—were the troublesome points.

Mr. Lansden—I want to say that, in my opinion, the cause of failure heretofore has been because of the attempt of superintendents and engineers to dictate to capitalists about how they shall take care of their stock. My experience has been, as a general thing, that those who own the stock, so long as their dividends are paid, and they are not afraid of being interfered with by some other company, have no heart in the matter at all. I find that stockholders who expect a raid is about to be made on their property, or when they are anxious to influence the City Council, are apt just then to be most anxious about studying up the methods of gas manufacturing; but their fever for information passes away with the removal of the danger clouds. I do not believe that the proposed institute can be successfully established, because capital is satisfied so long as it receives dividends. Capitalists want you to earn their interest, and will say that that is what they pay you for doing.

Mr. McMillin—There is, perhaps, a good deal in what Mr. Lansden says, but his assertion is hardly borne out by my own experience. At that time of the committee of 13 I represented five companies, in four of which I could do as I pleased about it. Neither of the four had anything to fear from competition, yet I signed for them all. In the fifth company we sold gas at a price that precluded an opposition onset, and in the latter instance I simply recommended the project favorably to my board of directors, who authorized me to agree to the proposition. In those five cases it was not fear of competition that induced the companies to assent.

Mr. Thomas—I believe Mr. Egner submits a proposition quite different from that considered by the committee of 13. The latter plan was not entirely original with them, for the same suggestion was made 25 years ago, and had it been then adopted and carried out we would not have been witnesses to the wholesale raiding that the gas business has been subjected to in the last decade, or so; but as I understand Mr. Egner's paper, he simply proposes to get at the facts—to find out if any of these new inventions are meritorious and worthy of adoption. As he said, hardly a day goes by but someone obtains a patent for a machine or process, when a little later on someone else produces another machine or process, almost identical in principle with the first, but the parchment is secured on the ground of an "improvement." Nevertheless, some of these systems may contain something which it would be worth while for all of the gas fraternity to be advised about. The adoption of Mr. Egner's plan would secure this advice at very slight expense. The committee of 13, as I understood their aim, proposed to levy assessments to be used in the attempt to prevent the success of opposition schemes. It appeared to many that some of the gas companies were to be called on to pay a pretty high figure for the strengthening of a few; but how would it have worked? For my part I believe if the plan mooted in New York city over 25 years ago had been put in operation, and prosecuted vigorously, the raiders would not now be in the possession of quite so much capital. Mr. Egner's plan (it seems most feasible) can be started on a modest scale, and be brought to full fruition in the future. As outlined by him, I believe that an expenditure of $10,000 per annum would insure an amply satisfactory commencement; and what would that sum be when assessed on the total output of the gas companies of the country? In my opinion that tax would be the cheapest one ever levied on the gas makers, remembering the solid benefit they would derive from the bulletins of the institute. I know something of the trouble mentioned by Mr. McMillin with regard to the difficulties encountered by the committee of 13. I had a great deal of conversation with Mr. Page at the time, and helped along the matter as far as I could; but as soon as the details were placed before the larger companies, or when they understood what their assessments would be if the plan were carried out, they voiced their objections. They seemed to think it would be nonsensical to pay large amounts of money, not for the purpose of sustaining themselves, but to help along some of the smaller fry. But the present movement is of an entirely different character. Here they will be asked to pay only for valuable information. What may grow out of it must be left for the future to determine.

Mr. Watts—I would suggest that the committee consult with the Railway Association, whose headquarters, I think, are in Chicago. That Association is supported by several of the railway companies of the country for the purpose of examining the different appliances incident to their business. The members of the Association each pay their proportion of the expense of obtaining the information, and none but members receive the bulletins. I think we might arrange it so that only those companies composing our institute could have the benefit of the information obtained by the institute. The Railway Association have a permanent secretary, and he names certain members of the institute to investigate and pass upon any special appliance that is brought up. It is not part of their purpose to prevent opposition, but merely to examine new appliances, and to obtain statements as to the value of these from men who are capable of giving correct information.

Mr. McMillin—I think that we are following right along in the old footsteps. Three or four members of the committee of 13 can quote, from A to Z, the rules, regulations and articles of association of that Railway Association. In fact they studied them so carefully that they became much more familiar with them than they probably are with their own by-laws. This Railway Association is the one after which all similar organizations are modeled, and is probably the most successful one in the country. I would, if I could, disabuse the minds of members of the idea that the chief feature in our former plan was the defensive one. It was not so. The very features now recommended as desirable were the chief features of the plan virtually agreed upon. The idea of the large assessment was very much like the guarantee fund of certain organizations—they get up a guarantee fund for effect, but do not expect to have anything to pay.

The President—They get beaten occasionally.

Mr. McMillin—Occasionally they are assessed a trifle. If it were possible for an association by assessment to raise $100,000 for the purpose of defeating a raiding party, the raiding party would not be apt to make the attempt. It was never expected that any greater assessment would have to be actually made than you would have to make under the present plan suggested.

Mr. Cosgrove—This is a subject entirely new to me, but Mr. Egner's paper causes me to look on it as a grand good thing. I am willing, on behalf of the Evanston (Ills.) Company, to pledge myself to pay its pro rata towards the expense of carrying on an institute of the kind proposed. Almost all scientific bodies have their technological and poly technic schools. As I understood the circular issued by the committee of 13, their proposal was in the nature of the organization of a protective association, and intended chiefly to afford protection from raiders. The plan now proposed is for an organization of a higher order, and on a grander scale.

The President—As far as I understood the Cincinnati meeting project, that was principally intended to benefit small companies, in respect to everything connected with gas works plant. But every engineer or manager of a gas works has his own particular hobby. If one prefers a 20-inch D-retort, another holds out for a 15-inch vessel; one man has a mouthpiece of a peculiar shape, while his neighbor desires something different. The trouble is to get managers and engineers to agree to one general plan in anything, and that is what we have got to come to before we can achieve success. The first appeal must be made to the managers and engineers of works; and there should be some uniformity about the plan of laying out plants. We should come together to find out the best plan, and when we have done so, then you can carry out the Egner suggestion, but not before. The idea of Mr. Egner is, to my mind, a good one.

Mr. Egner—Our honorary member, Mr. Harbison, is here, and we would like to hear his opinion on this question.

Mr. Harbison—I have not given this matter very much consideration. I attended one of the first meetings called to consider the Cincinnati proposition, and must say that my impression in regard to the object of the organization was like unto that of many gentlemen who have expressed their opinions here to-day—that the fund to be raised was principally for purposes of defence. I did not favor the formation of an association with that special object in view, because I did not think it would be fair to those who had been sufficiently progressive in their business to reduce their selling rates to a scale which offered no special inducement for raiders to attempt to divide the profits of the business. I do not quite agree with Mr. Lansden that stockholders would not be specially interested in this matter. Perhaps they would not be expected to have an interest, because they are not well informed. They depend upon their managers for the carrying on of their business, and for the dividends which they know are pretty sure to come to them at certain periods of the year. I do not quite agree either with the suggestion of my friend Watts, that only members subscribing to the expense of obtaining this information should have the benefit of the information obtained. I have always said there were no secrets in the gas business, that we are a party of men engaged in an honorable profession, and that we are ready, therefore, to show our hands and our books at any and all reasonable hours of the day, and sometimes in the evening; that we are as ready to give information as we are to give light, and that of the very best, for the benefit of those who may ask us with regard to it, or seek the light which we have to give; and there are very few of us who can get along without such aid. What do we have this organization for, and what do we come to these meetings for, if not to give and get information from each other? If a number of the members of this Association should belong to the proposed gas institute, when organized, and should come here with secrets locked up in their bosoms—secrets of information derived by that organization in its investigations—are we to suppose that the members who belong to such an institute, and have that information, would not answer the questions which would be asked in this meeting? I cannot believe it to be so. Why, sir, those of us who live in the East, and have not yet attained to the eminence reached by the members of this Association in carrying on our business, come here for the sake of learning from you, so that we may go back in some measure approaching to the degree of excellence and perfection attained by you here. I should feel very much discouraged if I thought I could not come here in the knowledge that men like McMillin, Howard, Lansden, and the other lights of this Association, would freely tell me what they knew of advance in our common calling. I think an organization like that proposed by Mr. Egner would do much good; but I do not think we shall all ever attain to that condition where only one style of bench, retort, mouthpiece, etc., will please us. Suppose the institute passed its word that such a bench was a better one than that which my friend McMillin is using, or that which our worthy President approves; would that fiat prevent McMillin, for instance, from adopting a bench that he liked better than the one stamped as "good" by the seal of the institute? I think McMillin would be apt to follow his own opinion in that event. But a good deal of information of great value to those seeking for it would be secured, at but slight expense, were the institute an established fact. It is quite an important matter, and I heartily favor the trial of such an organization. I think that the management being in the hands of the fraternity it would be conducted as all gas business is—on straightforward, honest business principles. That there would be no misrepresentations made; and, if the stamp of the institute were put upon any invention, or of any kind of system, it would be of value, and could be relied upon by anyone engaged in the business, whether a member of the institute or not.

(To be continued.)

New Process for the Protection of Iron.

The *Scientific American* says that the process of preserving iron from oxidation may fairly be termed one of the great issues of the present day. Hitherto it has been effected in widely opposite ways. One method has consisted in converting its surface into an oxide, another in applying paint or enamel, another in coating it with zinc—a metal more readily attacked than itself. All these methods bear the aspect of being expedients merely, and do not present a definite solution of the problem.

Of all the ordinary metals, lead, which resists some of the stronger acids, such as sulphuric or hydrofluoric, may be regarded as the most durable. A new process of coating iron with an adherent layer of this metal has recently been discovered and perfected by Mr. F. J. Clamer, of the Ajax Metal Company, of Philadelphia. By it the iron is covered with a uniform coating of silvery lead. The roughnesses and indentations of the iron receive the lead, as well as the smooth parts. The result is a perfectly protected piece as long as the lead endures, and it is practically everlasting. No oxidation can affect the iron.

We have before us some admirable specimens of work done under this new process. It is specially adapted for the protection of sheet iron for car and other roofing, for spikes, bolts, nuts, pipes, boiler tubes, water tanks, iron bridges, and wherever the protection of iron or steel, wrought or cast, is desired. Its cost is no greater than that of the ordinary zinc or galvanic process. The superior excellence of the new method, its comparative cheapness, and the wide range of its applications, mark it, in our opinion, as one of the most important of recent improvements in the useful arts.

Translated for the JOURNAL, from the *Journal fuer Gasbeleuchtung*, by "A. S."* (Concluded from page 318.)

Has the Length of the Photometer Bar any Influence in Determining the Results of the Observations?

By D. COGLIEVINA, C.E., Vienna.

The correctness of this equation can easily be proved by considering that the numerical value of the same must have no influence upon that of the proportion $\frac{J}{R^2}$, and must consequently be = 1, when $e = 0$. And, indeed, we have for

$$\frac{1}{3}\left[\frac{2R^3}{(R^3+e^3)\sqrt{R^2+e^2}}+1\right]=1$$

then

$$R^3=(R^3+e^3)\times\sqrt{R^2+e^2};$$

but since we have, as appears from the diagram (see May 16),

$$R_1^2=R^2+e^2,$$

that, when substituted, gives $R = R_1$ and $e = 0$.

We will now proceed to find the influence of K upon the value of each respective observation—that is, to compare the readings from the bar with the values furnished by equation (1). For this purpose we will assume that the observations be taken one after another, on two bars of unequal length. In the first instance let the constant distance between candles and disk be $a = 0.5$m; in the other, $a = 0.2$m. An equal illumination of both sides of the disk to be obtained in the first instance at $R = 2$m; in the other at $R = 0.8$m. Then we would obtain, in either case, readings of an intensity—

$$J=\frac{R^2}{a^2}\text{ candles.}$$

But considering that, instead of the proportion $\frac{J}{R^2}$, we have actually to use $\frac{J}{R^2}\times K$, we have the intensity in question given by the equation

$$J_1=\frac{R^2\times H}{K}$$

Now, what would be the value of J_1—

1, for $e = 0.03$m } with $a = 0.5$m and $R = 2.0$m?
2, for $e = 0.06$m }
3, for $e = 0.03$m } with $a = 0.2$m and $R = 0.8$m?
4, for $e = 0.06$m }

Example 1.—Here we have

$$h=\frac{i}{a_2}=\frac{1}{0.25}=4,\text{ and then }J_1=\frac{R^2\times h}{K}=\frac{4\times 4}{K}=\frac{16}{K}$$

Now, since

$$K=\frac{1}{3}\left(\frac{2\times 8}{4.0009\times 2.00022}+1\right)=0.99978,$$

we have, consequently, $J_1 = 16.00352$ candles.

Example 2.—There we have also

$$h=4\text{ and }J_1=\frac{16}{K};\text{ but}$$

$$K=\frac{1}{3}\left(\frac{2\times 8}{4.0036\times 2.00089}+1\right)=0.99910,$$

and then, $J_1 = 16.01441$ candles.

* TRANSLATOR'S COMMENTS.—I believe Herr Coglievina is in error in the matter of infiltration of air into gas mains under pressure. No doubt, the longer the bar the more exact will be the results, providing there is light enough thrown upon the disk; yet, to take proper readings, neither can the employment of an excessively broad (or long) flame lead to exact results. In this connection, however, I think the author errs in preferring the Argand to the batwing simply because its flame is not so wide, because its flame is, on the other hand, a great deal longer, and its extreme points are probably just as far distant from the optical axis in a vertical distance as those of the batwing in a horizontal one. I also think that the diameter of the transparent part of the disk, as compared with the size of the luminous zone of the flame, will make some difference.

Example 3.—We have

$$h = \frac{1}{0.04} = 25, \text{ and } J_1 = \frac{0.64 \times 25}{K} = \frac{16}{K}; \text{ and}$$

$$K = \frac{1}{3}\left(\frac{2 \times 0.512}{0.6409 \times 0.80056} + 1\right) = 0.99859$$

Consequently $J_1 = 16.02259$ candles.

Example 4.—Here we have also

$$h = 25, \text{ and } J_1 = \frac{16}{K},$$

$$K = \frac{1}{3}\left(\frac{2 \times 0.512}{0.6436 \times 0.80224} + 1\right) = 0.99442,$$

and $J_1 = 16.08978$ candles.

To avoid any misunderstanding we will say right here again that these intensities are by no means the real values, because they are based upon the arbitrary assumption that the readings of the bar only depend on the proportion, $\frac{R^2}{a^2}$, and are not influenced by the proportion $\frac{h}{H}$ in any way. Therefore no definite value need be attached to the above figures; but by comparing them we will be enabled to gain an insight into the circumstances in question.

From a comparison of examples 1 and 2 with 3 and 4 it follows:

"That, entirely independent of the length of the bar, our present method of photometrical observation of a given flame leads to an error, which error is in direct proportion to the width of the flame."

And we further learn, by comparing examples 1 and 3, and also 2 and 4—

"That, independent of the width of the flame, our present method of photometrical observation leads to an error, which error is indirectly in proportion to the length of the bar."

And finally, by comparing examples 1 and 4 we find—

"That, in order to diminish as much as possible errors which must be expected to occur with our present method of measuring light, the use of long bars and narrow flames is to be recommended."

III.

We think that great strides toward the final solution of the photometrical problem will be made when the eminent importance of the above recommendation becomes generally recognized. It expresses unmistakably the demand that, in order to arrive as nearly as possible at even results of observations, two equally important items must be decided on; that is—

1. The style of burner.
2. The length of the photometer bar.

As regards the selection of the burner, the above expressed recommendation undoubtedly prohibits the use of the batwing type in connection with photometrical observations, especially since the flame of this burner is so much wider than that of the candle, and, consequently, the the factor, K, can never be just $= 1$. On the other hand, when an Argand burner giving equal light is used, where the difference between the value of, e, and the width of the flame of the candle is much smaller, this otherwise one-sided influence is now brought to bear nearly evenly on both sides of the disk and, therefore, disappears from our calculation. Furthermore, we have to take into account the important circumstance that, in the case of the Argand, the intensity of the flame is spread evenly over the whole width of the luminous zone, same as assumed in the above examinations, whereas in the batwing the greatest intensity lies by no means in the line of the optical axis, but rather in those parts of the flame which only partly exert their influence. Since the degree of this lack of uniformity in the distribution of the light varies with every particular batwing burner, we may come pretty near the truth by attributing to just this circumstance the principal cause of the differences in observations with such burners.

A proper choice of the length of the photometer bar must, if the value of the intensity to be measured and the width of the corresponding flame are equally to be considered, conform with the condition expressed in the equation—

$$K = \frac{1}{3}\left[\frac{2r^3}{(R^2+e^2)\sqrt{R^2+e^2}} + 1\right] = 1$$

or—

$$R^3 = (R^2+e^2)\sqrt{R^2+e^2}$$

Now, we have—

$$J = \frac{R^2}{a^2}, \text{ and } R^3 = R \times a^2 J,$$

consequently

$$R \times a^2 J = (R^2+e^2)\sqrt{R^2+e^2}, \text{ and}$$

$$a = \sqrt{\frac{(R^2+e^2)\sqrt{R^2+e^2}}{R \times J}}$$

To eliminate from this equation the value of R, it is quite necessary to determine that degree of light required to take readings with the most exactness. If n denotes this (as yet unknown) degree of light, we have

$$n = \frac{J}{R^2}, \text{ and } R = \sqrt{\frac{J}{n}}$$

Substituting this value of, R, into the above equation, we get

$$a = \sqrt{\frac{\left(\frac{J}{n} \times e^2\right)\sqrt{\frac{J}{n} + e^2}}{J \times \sqrt{\frac{J}{n}}}}$$

This equation shows at a glance the important fact that the value of a remains constant, as long as the factor e^2 may be neglected, which is certainly correct in the case of examinations of light as generally called for in our contracts for gas supply, and when using an ordinary Argand burner. The above equation is then simplified thus—

$$a = \sqrt{\frac{1}{n}}$$

In a general way the length of the bar is

$$L = a + a\sqrt{J} = a\,(1 + \sqrt{J})$$

If gas men could agree upon a proper value of n, same as was fixed once before on the basis of the well-known results of H. Cohn, "That for obtaining proper readings a light of 10 meter candles is required," then

$$L = (1 + \sqrt{J})\sqrt{\frac{1}{n}}$$

is the proper length of the bar, which will allow readings up to an intensity J, and is consequently the standard length. To reach this end, the authority of the results of some experiments is only wanting, the making of which we would warmly recommend to the Society of German Gas Engineers.

SPECIAL ENGLISH CORRESPONDENCE.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, May 10, 1887.

Another Steam Roller Case.—Gas for the People.—A Reckless Corporation.—Another Suggestion as to Selling Sulphate.—Natural Gas in England.—New Applications for Coal Tar.

The local authorities in the West End of London appear to be rather partial to litigation. Some time since I noticed the fact that the Gas Light and Coke Company, which supplies that district, had succeeded in securing an injunction preventing the parish authorities of St. Mary Abbots, Kensington, from using a 15-ton steam roller for the repair of the roads, on the ground that it injured the gas pipes, causing loss to the gas company, and also inconvenience to the public. A neighboring parish—St. Georges, Hanover Square—refused to recognize this decision and persisted in using a roller of similar proportions, notwithstanding the fact that breakages of mains and one or two explosions were traced to it. So the company had no alternative but to spend money (which otherwise would have gone to reduce the price of gas) in proceeding against the parochial authorities. The case was tried at the High Court of Justice, before Justice Grove and a special jury. The company wisely engaged the best legal advice attainable, and produced quite an army of witnesses. In addition to their own employees who proved the facts of the case, that the breakages in question were due to no other cause than the use of the steam roller, there were engineers and iron founders who certified as to the quality of the pipes used, representatives of some of the best firms of gas engineering contractors, and consulting engineers experienced in road work and pipe laying of all kinds. Eminent road contractors, and also a large number of surveyors employed by local authorities in London and elsewhere, certified that the use of such a heavy roller was by no means necessary, as roads could be repaired or made quite as economically with a roller of about half the weight. Although a great difference of opinion prevailed on this subject, the majority were in favor of a roller weighing 5 to 7 tons. Against this the vestry relied mainly on the evidence of their own surveyor, and the ingenuity of counsel to pick out flaws in the evidence. The surveyor

had tried experiments in the way of burying an egg, a whiskey bottle, and a piece of gas main pipe, and running the roller over them, of course without injury to either. But he did his case harm rather than good by trying to prove too much. It was never asserted that the roller crushed up every pipe along its track. The argument was that here and there were soft places, due to the top crust being worn away more than usual, or to subsidence under the pipes caused by drainage operations or other excavations. Under these circumstances the whole weight of the machine may bear down on the pipe, and there may be a contributory cause in the shape of a service inserted into the main, thus weakening it. These of course are the exception and not the rule, and, therefore, the experiments of the vestry surveyor were beside the mark. A piece of gas pipe, loose, is under different conditions to a line of pipe jointed up, and drilled here and there for services; and he probably knew better than to risk the safety of his whiskey bottle by burying it in made ground without a good protecting crust. After a brief deliberation the jury found that the pipes had been broken by the defendant's roller; that the use of such a roller was not reasonable or proper under the circumstances; that it was not used with sufficient care; and that the plaintiff's pipes were reasonably and properly laid. Justice Grove thereupon granted an injunction with costs. It is rumored that this decision will be appealed against; but meanwhile, if the road authorities persist in using the roller, it will of course be at their own risk.

It is remarkable that a suggestion which bears the mark of a step backward should emanate at about the same time from such different quarters as the meetings of gas engineers in the States and the columns of our London *Journal of Gas Lighting*. An itinerant preacher once stated that he knew honesty was the best policy, for he had tried both; and with regard to the use of the gas meter, those whose experience dates back to an era earlier than the introduction of this much abused but nevertheless wonderfully ingenious machine, are unanimous in their opinion that the plan of supplying "by meter" is a very great advancement on the old system of supplying gas by contract. Yet now we find it suggested to go back to pre-meterite times. Some of the American gas engineers supply gas stoves at fixed rates, and others suggest competition with the electric light by putting in large gas burners and supplying them with gas at a fixed annual charge. And the *Journal of Gas Lighting* suggests, as a means of popularizing the use of gas amongst the poor, that artizans dwellings should be furnished with every appliance necessary for the use of gas, and that a fixed charge of a few pence per week should be made for each light, the same being calculated to cover both the cost of the gas used and the wear and tear of the fittings. Circumstances alter cases, and the one thing that has suggested this apparent retrogression is simply—competition. Here it is cheap oil; in the States it is electricity. Let us all do our best to sell as much gas as we can, whether it goes through a meter first or not. What with differential prices, special terms for day or for summer day consumption, and meters to register each class, and the contract system inclusive of appliances or otherwise, gas consumers ought to be satisfied. But they never will be, unless some ingenious inventor can hit on a plan that will enable "everybody to have gas cheaper than everybody else."

The town authorities of Weymouth, a popular south coast watering place, have been indulging in the pleasant but not profitable occupation known as "reckoning on the chickens before they are hatched." Towns of this description have lately become very enterprising in the way of "improvements," such as piers, esplanades, parks, etc., that are likely to add to the attractions offered to visitors, the costs being defrayed out of the public rates. And in some cases these plans—such for instance as a pier, where a small charge per head can be made for admission—have turned out a profitable investment. In other cases the reverse has been the case, and the rates are very high. Some members of the Weymouth Town Council, seeing that certain embellishments of this nature might be added to their town with advantage, hit over the happy idea of buying up the gas company and the water company on profitable terms, and applying the profits earned by these undertakings to the costs of these improvements. A bill was accordingly promoted in Parliament for powers to carry out this scheme, and after some $3,500 had been expended in preliminary expenses, affairs came to that stage when the consent of the companies was needed. On this being solicited both undertakings declined to enter into the matter, so all that can be done is to get "permissive clauses," giving powers for the corporation to agree with the companies, inserted in the act. The matter is still under discussion, but it appears probable that the Corporation, if they get the improvements, will have to pay for them in a straightforward manner; and some of the ratepayers are beginning to ask, with more force than politeness, what benefit is likely to be received by them in return for all this expenditure.

In March I referred to a plan that had been tried for increasing the local demand for sulphate, and now have to describe another, which has been introduced by Mr. J. F. Bell, of Stafford, with such success that he is now disposing of the whole quantity of sulphate made at the Stafford Gas Works amongst local farmers. This was simply to employ a firm of artificial manure merchants, having a good connection amongst farmers, as agents for its sale. The difficulty existing in the way of the direct introduction of sulphate to the users by gas companies is not likely to be lessened by the merchants who are accustomed to supply artificial manures, seeing that the result is likely to be a loss of trade to them, and, therefore, the idea of securing their co-operation recommends itself at once as being worthy of imitation. I have repeatedly alluded to the desirability of using the sulphate in the locality or neighborhood where it is produced, so as to avoid loading it with heavy transit expenses, which must eventually fall on the user. Mr. Bell also points out that 4 cwt. of sulphate is as efficient as 5 cwt. of nitrate of soda—a fact which should be prominently brought before the farmers, now that sulphate and nitrate are, weight for weight, about the same in price.

At a recent meeting of the Manchester Geological Society the subject of natural gas was treated upon in a paper read by Mr. G. H. Kirkham, who, after alluding to the extent that its utilization, both for lighting and heating purposes, has acquired in America, proceeded to deal with its existence in the coal measures of this country, and suggested that it should be turned to account in some way, thereby obtaining some value from it, and at the same time relieving the miners from the dangers due to its presence. His idea seemed to be that borings might be made, and the gas collected at the surface of the ground. The paper was discussed at length at a subsequent meeting. It is evident that the success or otherwise of the plan must turn upon the existence of a large supply of gas, and it was questioned whether that given off in coal mines, or contained in the ground in their neighborhood, was either sufficient in quantity, or regular in supply, to the extent necessary for its utilization. Experiments had been made on a small scale in the way of utilizing such gas in the Wigan district; but the supply was irregular and the quality very poor, so the experiments were dropped as likely to secure no practical result. Another speaker remarked that the natural gas in America did not come from the coal measures, and it appeared that the condition for obtaining anything like the volume or quality of gas that is found in the neighborhood of Pittsburgh, Pa., does not exist in this country.

Two new applications for coal tar, both of an astounding character, have been announced. A Mr. James Hargreaves, of Widnes, claims to have made an engine which is capable of developing 30-horse power and upwards, and consumes only two gallons of tar per hour. Any suitable liquid can be used, such as crude petroleum, intermediate oil, or waste. It is needless to point out that the cost of working this engine, seeing that the fuel can be obtained at two cents per gallon or so, would be a mere fraction as compared with that of an ordinary steam or gas engine. Not only does it appear that a vast amount of potential energy can be developed from coal tar, but also a great illuminating value. An appliance known as the Lucigen light, consists of a simple device for converting oil into spray, by means of compressed air, and burning this spray from the mouth of a large tube. It cannot be used on the small scale, and it makes a hissing noise. But for lighting large workshops, open spaces, etc., it is found to be very successful in developing a great amount of light at a small cost. Mr. J. Smith, of the Rosewell gas works, has tried gas tar in one of these lamps, and finds that it gives a flame some two feet high by five or six inches broad, having an illuminating power of more than 2,000 candles, the consumption of tar being less than two gallons per hour.

Surely, it is one of the marvels of this age that a fluid which, if we believe all we hear, is capable of developing a vast amount of potential energy, either in the form of heat or power, of supplying a brilliant light, of yielding an endless variety of solvent, lighting or lubricating oils, that contains such useful substances as creosote, carbolic acid, and albocarbon, to say nothing of the rare dye stuffs, essences, and medicines that can be extracted from it, and the fact that one-half to two-thirds of it consists of pitch which is always in demand for various purposes—that may be used in its crude form as a paint or preservative, for making asphalt, or in the production of artificial fuel—should yet be a drug in the market, at the absurd price of one cent per gallon, or less.

SIBERIAN EXHIBITION, 1887.—It is arranged that a Scientific and Industrial Exhibition of Siberia and the Ural shall be held at Ekaterinburg in July and the first half of August next. The Exhibition is organized by the Uralian Society of Natural Science, and is divided into nine sections, including natural history, anthropology and archæology, mining, manufactures, domestic industries, fine arts, etc.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

DENVER (COL.) GAS MEN AT WORK.—Engineer Fay intends to keep the Denver plant up to the highest standard, and has determined that, to compass the desired object, a pretty heavy expenditure will have to be made this summer. The plans for the extensions have been agreed upon, and, if we mistake not, the Smith & Sayre Manufacturing Company is under contract to furnish the necessary machinery. While not certain as to the nature of all the apparatus to be supplied, we do know that a "Standard" washer-scrubber, equal to handling one million cubic feet of gas per diem, is to be installed. Mr. Fay, in consequence of this determination, will not be able to sniff the salt breezes of the Eastern coast line during the summer dog-days; but when he "comes on to the meeting" next October, the Atlantic Ocean shall still be able to extend a greeting which, though perhaps somewhat cooler than if he came in August, nevertheless will yet be regal, if not tempestuous.

DULUTH (MINN.) ALSO IN LINE.—At a Directors' meeting of the Duluth Gas and Water Company, held something over a fortnight ago, a comprehensive scheme of plant extension was discussed, and the outlines of same were partially agreed upon. The non-resident representation on the board was quite large—Messrs. W. O. Cole, of Chicago, Ills.; J. J. Moffat, of Watertown, N. Y.; and W. H. Doulton, of Portland, Me., having been present—therefore we presume that the work to be done is to be on a large scale.

CHANGES AT DETROIT, MICH.—Recent advices go to show that Supt. E. M. Breese has resigned his berth in the Detroit gas works, and that Mr. Francis Dunlap has succeeded him. James Findlay is to assist the latter. We are right sorry that Mr. Breese could not see his way clear to remain in charge, particularly so when one remembers the high sense of fairness possessed by the executive management of the Detroit Company. We hope that our information is incorrect; and that "hoping" is a good deal out of line with the usual run of newspaperdom.

ANNUAL ELECTION, GLENS FALLS, N. Y.—At the annual election of the Glens Falls Gas Light Company the following officers were chosen: President, F. A. Sabbaton; Vice-President, Jones Ordway; Sec. and Treas., E. T. Johnson; Supt., H. A. Brooke. The Directors comprise Messrs. F. A. Sabbaton, Paul S. Merrifield, Jones Ordway, R. Kipp, D. H. Cowles, E. T. Johnson and H. A. Brooke. In further connection with the artificial lighting supply of this town we understand that the Glens Falls Electric Light Company—it has been in existence since '84—proposes to bring its capital stock up to $35,000, for the avowed purpose of securing whatever privileges the Thomson-Houston Company may or shall secure from the town. It might be just as well to note the fact that the local company could possibly get along without following out the "pig in the poke" system; but perhaps the Thomson-Houston folks want the "pig," and are willing to leave the "poke" to the local branch, supported, of course, by "home capital." Another grandiloquent reason for increasing the capital stock is said to be to provide for the "establishment of a large steam plant for street, commercial, and, possibly, private purposes." Oh! how these bubbles "float;" and how great is the per cent. of alka(li) in the soap which gives tenacity to the frothings of the bubblers.

WORCESTER (MASS.) ITEMS.—At a meeting (May 18) of the Directors of the Worcester Gas Light Company the official verdict of the Gas Commissioners, in the case of the gas consumers vs. the Company, was received and read. The Board thereupon voted to reduce the price of gas, from and after first prox., to $1.80 per thousand, with a discount of 30 cents per thousand for prompt payment, equivalent to a net rate of $1.50. Prompt enough acceptance of the Commissioners' recommendation is signified by that action; but it is an open secret that if President Sargeant and Brother Rollins had all to say about these things the reduction would have been granted long ago. The director who "wants it all" has had his day in Worcester, and peace be with him in his downfall. The city authorities have made a contract with the local electric light suppliers whereby the latter are to perform the public street lighting for three years, for the sum of 60 cents per light for an all-night service. It is an easy matter, however, to enter into such a contract with the Worcester authorities, but it is somewhat harder to obtain pay therefor. The Worcester Gas Light Company will probably agree with us in the latter statement. Then, again, 60 cents per light per night is a good round figure nowadays for arc lighting. The Lincoln square holder is ready for duty. Our editorial columns contain mention of the verdict of the Gas Commission as alluded to above.

PERSONAL.—Mr. James H. Walker, who for the past six years has been in the service of the Parker-Russell Mining and Manufacturing Company, St. Louis, Mo., is now in the employ of the Fuel Gas and Electric Engineering Company, of Pittsburgh, Pa. Mr. Walker is in charge of the gas department of the Company's business. We wish him all possible success.

AN ECHO FROM GRAND RAPIDS, MICH.—Not long ago Mr. Thos. D. Gilbert, Secretary of the Grand Rapids Gas Light Company, enabled us to tell the fraternity that cheap gas rates (maximum, $1.50, minimum, $1.20) would prevail in the capital seat of Kent county from the first day of current year. We can supplement that announcement now by saying that Brother Gilbert is superintending the erection of a double-lift holder, to have an estimated capacity of 300,000 cubic feet. The moral is plain and profitable. Cheap gas necessarily involves plant enlargement, and the establishment of peaceful relations with the consumer.

DEATH OF MR. LEWIS.—We regret the necessity that compels us to record the death of Mr. David S. Lewis, a well-known resident of Boston, Mass., whose demise occurred in that city, on Tuesday, May 17. Deceased was born in Rochester, Mass., in 1844, and graduated (in 1872) with high honor from the Massachusetts School of Technology. For several years thereafter he occupied a chair in the Bussey Institute, subsequently taking service with the Boston Gas Light Company as its chemist. Deceased was a thoroughly cultured gentleman, and his studious disposition, bright intellect, and purity of purpose well qualified him for his chosen path in life. In 1881 he was married to a Miss Weld (daughter of Addison Weld) of this city, one child—a daughter—resulting from the union. These survive to sorrow for and miss a fond husband and father. Interment was made at Rochester.

SOME ORDERS IN HAND FOR THE CHURCH TRAY.—Mr. John Cabot, of this city, is kept pretty busy getting out orders for the Church purifier trays. Two of the largest contracts now on his books are the following: Trays for the 20 ft. by 20 ft. purifiers of the Syracuse (N. Y.) Gas Light Company; and 40,000 square feet for the purifying boxes of the Consolidated (N. Y.) Gas Light Company. This last quantity is equivalent to supplying three sets of the new purifiers at the 14th, 21st and 44th street stations of New York city's huge gas corporation.

GAS COAL FOR THE QUAKER CITY WORKS.—Director of Public Works Wagner (Phila. Pa.) has decided upon the following allotment for coal supplies to the local gas works during the fiscal year: Penn Company, 125,000 tons; Westmoreland Company, 125,000 tons; Manor, 25,000 tons; Aurora, 30,000 tons; Flemington and Gaston, 25,000 tons; Despard, 20,000 tons; Earl of Hopetoun cannel, 6,000 tons.

CHANGE IN THE MASSACHUSETTS GAS COMMISSION—Mr. A. B. Coffin, of Winchester, has been selected to fill the vacancy in the Massachusetts Gas Commission caused by the resignation of Mr. Starkes Whiton. The latter gentleman has accepted a place on the State Savings Bank Commission. The new appointee is a lawyer of excellent repute. Mr. Whiton's decision was received with regret, but the general impression is that his new berth will be more congenial to him, since the ramifications of banking are to his mind as an open book is to his vision.

BIRDS OF PASSAGE.—Perhaps the gas men are in mortal terror over the future security of their position as artificial light suppliers, but the idea hardly seems reconcilable with the fact that they can find time—and banker's drafts—to go off in such numbers to "foreign parts." Benson, Stein, and others have but unpacked their trunks, when along comes another list of those who have only just packed theirs. Mr. M. S. Greenough, of the Boston (Mass.) Gas Light Company, is ere this safely landed on the other side; Mr. John McDougall, of the Hornellsville (N. Y.) Company, sailed, in the Servia, on May 21; Mr. Jas. Somerville, of the Indianapolis (Ind.) Company, was snugly ensconsced in the Wyoming, on May 19; while Mr. J. H. Morley, of the Cleveland (Ohio) Company, will take flight on June 18. Perhaps the Jubilee Meeting of the British Gas Institute can hereafter be characterized as the occasion of the "Yankee invasion," for we presume that our "birds of passage" will find it perfectly convenient to be in Glasgow, Scotland, on the 28th inst. May they all have a merry time, and a prosperous voyage home.

SOMETHING MORE ABOUT GRAND RAPIDS, MICH.—In order to complete our previous mention of gas extensions at Grand Rapids we note that the Company will lay a new 20-inch leading main from the works to the business portion of the city; also, a considerable stretch of 10 and 12-inch pipes. The holder is to be inclosed in a brick building, covered

with an iron trussed roof. The Kerr Murray Manufacturing Company will erect the holder, the roof to house being also included in the contract.

AGENCY FOR THE BRECKENRIDGE CANNEL.—Messrs. Perkins & Co., 228 Produce Exchange, this city, under whose prompt and business-like direction the famous Breckenridge cannel has been distributed so largely throughout the United States and Canada, have had their agency in this respect extended to cover Great Britain, the Continent and South America. We congratulate them.

THE ARKANSAS CITY (ARK.) GAS PLANT.—Having previously mentioned the fact that a gas company to operate in Arkansas City had been organized, we may now state that Colonel C. K. Holliday, of Topeka, Kansas, who was the prime mover in the new enterprise, has awarded the contract for furnishing the iron work for a complete new six-inch coal gas plant in that place to the Kerr Murray Manufacturing Company, of Fort Wayne, Ind. The contract embraces an iron trussed roof for retort house, bench castings, exhauster, horizontal pipe condenser, a Chollar patent scrubber, purifiers—8 ft. square—station meter, a 50 ft. by 18 ft. single-lift holder and a steam boiler. The construction of the Arkansas City plant will begin at once, and be under the supervision of Mr. B. E. Chollar, so well known from his connection with the Excelsior Gas and Coke Company, Topeka, Kansas.

WE MIGHT AS WELL FINISH IT.—Mention of the above puts us in mind that the Kerr Murray Company is enjoying a very prosperous season. We have already noted what its proprietors are doing at Grand Rapids and Arkansas City, but in addition to those contracts they have agreed to put up a telescopic holder—68 feet 6 inches diameter in 20-ft. lifts—at La Crosse, Wis.; also, a 40 ft. by 16 ft. single-lift holder for the Santa Fe (New Mexico) Company. Verily, even if Brother Cressler does not go to Europe this summer, he will nevertheless have occasion to do some tall traveling.

ANNUAL ELECTION, EAST ALBANY, N. Y.—At the annual meeting of the East Albany Gas Light Company Messrs. Frank Chamberlain, Jas. H. Miller, Paul S. Merrifield, F. A. Sabbaton and P. A. Sabbaton were chosen Directors. Organization resulted in the selection of F. A. Sabbaton as President and Treasurer, P. A. Sabbaton being designated as Secretary and Superintendent.

AS VIEWED BY A MACON (GA.) NEWSMAN.—Some of the "gas grabbers" are looking with envious eyes at the territory so honestly covered and thoroughly supplied with gas from Brother Boardman's model Macon gas plant. The editor of the Macon *Daily Telegraph*—a *rara avis* among newspaper men is he—however, has been looking over the situation, and, to obtain a fair line on the matter, has calculated the percentage of reduction made by 71 gas companies in the country during the past 15 years. He thus sums up his conclusions. Premising the judgment with the remark that only two of the 71 (Yonkers, N. Y., 69 per cent., and Seattle, Wash. Ter., 75 per cent.) have been more liberal than Macon (62½ per cent.) during the period reviewed, he concludes: "This is interesting just now, as it goes to prove that the local company, never having had competition, has dealt more liberally than those in cities where competition did exist. The Macon reductions have been made under the present management, and it is only fair to infer that they will continue to be made"—right again, Mr. Editor, or we do not know Brother Boardman—"as fast as the cost of making the gas and distributing it through our wide streets and to our sparse population will admit. Let us do justice though the heavens fall." Amen!

HOLYOKE (MASS.) TO HAVE CHEAPER GAS.—The Holyoke gas plant is owned by the proprietors of the Holyoke Water Power Company who claim to have invested $100,000 for the purpose of furnishing gas to the inhabitants of that town. They have been pretty liberal in the management of the gaseous branch of their somewhat close corporation, and evidently mean to keep up with the times, for they now send us word that hereafter the gross price is to be adjusted at $2 per thousand. Prompt payment (within 5 days from presentation of accounts) secures a rebate of 5 per cent. to ordinary consumers; 12½ per cent. being allowed in case the consumption amounts to a certain fixed quantity. The prior gross rate was $2.25, the discounts having been similar to those stated. Last year the total output was 35½ millions cubic feet, and the average consumption per user is returned at 36,632 cubic feet, which will be noted as much above the general run. The plant seems to be well managed, although the main system might be profitably overhauled, for the leakage or unaccounted-for gas account is returned at somewhat in excess of 15 per cent.

CONSOLIDATED COMPANY (N. Y.) EXTENSIONS.—The Consolidated folks evidently mean that Chief Engineer Bradley shall put in a good portion of his time this summer in the Metropolis. The plant betterment arranged for is on a stupendous scale, since, in addition to the contracts given out as previously announced in these columns, we may add that the Continental Iron Works proprietors are to put up a mammoth holder on the Company's ground located between 15th and 16th streets on Avenue C. The ground bottom is quite soggy at this point, and in consequence the tank is to be built of steel plates—in tub fashion—to rest on a foundation of piles and concrete. The top of tank will, when in duty, be perhaps 32 feet above the ground level. The dimensions of holder are as follows: Outer section, 190 ft. diameter; diameter of tank, 193 ft.; depth of tank, 42 ft. 6 in.; height of sections (holder to be in three lifts) 40 ft. 9 in. These give storage capacity of 3¼ millions cu. ft. The new purifying house at the 44th street station is to be a really handsome structure, and is to have a total dimension of 120 ft. by 67 ft. Messrs. Moran & Armstrong are to put up the building, and Mr. Jas. R. Floyd will equip it with four sets of purifiers, 24 ft. square, to have 20-inch connections. The American Meter Company will put in a handsome station meter calculated to a duty of 2 millions cu. ft. in 24 hours. Mr. Floyd is to furnish the iron work for a new stack of 24 benches at the 14th street station, the Continental Iron Works to supply like material for a new stack of 20 benches at the 21st street station. In the meantime, may we ask, what are the city electricians doing in the way of plant enlargement?

ANNUAL MEETING PORTLAND (ME.) GAS LIGHT COMPANY.—At the annual meetng of this sterling Company (held May 18) the Directors passed a series of resolutions expressive of their regret at the decease of the Hon. Ezra Carter, late a member of the board. Deceased had been connected with the Company for 28 years. President Daveis read the annual report, which showed that the consumption of gas in the twelvemonth was, in round numbers, 49 millions cu. ft., as against 52 millions in the preceding year. The falling off is traced to the fact that the public lighting of the city is in the hands of the electricians. On the 1st of May, '86, but 10 lamps were gas lighted, and those were discontinued in a few days. The number of consumers (May 1, '87) was 2,805; May 1, '86, 2,791, or a gain of 14 for the twelvemonth. Coal used in year, 4,696 tons; oil, 25,064 gallons (67⅛ tons). These materials yielded about 53 million cubic feet of gas. The gas averaged (mean of three daily observations) 18.7 candle power. Coke sold, 99,483 bush.; tar sold, 257 bbls. The main system was increased by 0.35 of a mile. Enlargement of boiler house, including new roof to structure, the placing of a new boiler, and a new brick stable building, incurred an expenditure of $3,100. It was expected that 8 benches of retorts would have to be renewed in the present year. The usual dividend payments were made, and $4,000 was carried over to the renewal and insurance fund. The city of Portland owns 1,700 shares in the capital stock (7,000 shares being the total), and the death of Mr. Carter was seized upon by the authorities as a pretext for allowing them a representative in the board, which consists of six members. When the election for Directors was entered upon Mr. Herbert G. Briggs, acting for the city, voted the city's holding in favor of his selection as a Director. Mr. Briggs, however, secured no additional votes, and the tellers reported that Messrs. E. H. Daveis, C. B. Merrill, W. W. Thomas, Jr., W. H. Moulton, T. Cummings, and F. N. Dow had been chosen. Mr. Briggs, in order to attain the coveted seat, needed just 714 more votes than he secured. At the organization meeting Mr. Daveis was chosen President and Mr. Rolfe Treasurer.

AN ENGLISH HOLDER FOR THE TORONTO (CAN.) WORKS.—Messrs. C. & W. Walker, London, England, are to build the new holder at Toronto, they to complete the task by Nov. 1. It is to be in two lifts, of 35 ft. each. The diameter of first section is to be 150 ft.; that of the second, 148 ft. 6 in. This gives a capacity of about 1,200,000 cu. ft. A leading main (20-inch) has been put down between the works and the new holder two miles distant from the former. The restrictions imposed by the city authorities in regard to the issue of additional capital stock by the Company have been accepted by the former, although we think some of the conditions are onerous. At any rate the city has small reason for complaint in the premises, either in regard to the framing of the policy or in respect of the manner or spirit in which it was accepted. The population of Toronto is something like 130,000, and the annual send-out of the Toronto Company (now about 350 millions cu. ft.) increases at the rate of 17 per cent. per annum, while population increase does not exceed 8 per cent. Perhaps the explanation is to be found in the liberal management pursued by Mr. Pearson and associates, who are selling gas at $1.25, $1.10, and $1 per thousand—the latter being paid for gas used for cooking, heating, and power purposes. When all the plant extensions

contemplated have been finished, the sum of $500,000 will have been paid out by the Toronto gas men; but we must say we are sorry some one of our American manufacturers did not succeed in obtaining the award made to the Messrs. Walker, of England. However, if they are willing to be greatly underbid by foreign capital, perhaps our regret is misplaced.

AN IMPORTANT LEGAL DEFINITION.—We are indebted to the President of the Cincinnati (O.) Company for a copy of the decision handed down by the Circuit Court in the matter of a demurrer of Chas. J. Steinau against an injunction, previously issued by Judge Maxwell, at the instance of the Cincinnati Gas Light and Coke Company, restraining him from breaking a contract under which he had agreed (on March 16, 1886) to light his store, known as the "Palace," for a term of ten years with gas exclusively. Steinau, a few weeks ago, determined to employ incandescent lamps on his premises, whereupon the Company, insisting upon the fulfilment of the contract, prayed for an injunction, which prayer was heard. The Circuit Court sustains Judge Maxwell at all points. Rather than publish a condensed report of the findings in this issue we make the above mention now, and shall reproduce the matter *in extenso* in our mid-month edition. The General is great on earthworks, and also can "tell a hawk from a handsaw" in the matter of contracts, franchises, etc.

WRITING of the General and Cincinnati puts us in mind of the fact that the Cincinnati *Telegram*, which is particularly rabid on the subject of gas in general, and Hickenlooper in particular, has had a change of (we had almost said life) color. Its hue, formerly gory (albeit rather watery, or of the *vin ordinaire* shade) has merged into a dull, commonplace white. Under the earlier fashion it suggested one of ex-Senator Thurman's cast-off bandanas; but its present guise calls to mind the remnants of what was once a powerful factor—Senator Sherman's once ensanguined shirt.

ANOTHER HORROR AT THE MANKATO (MINN.) GAS WORKS.—A fortnight ago we were obliged to state that Mr. O. C. McCurdy, Secretary of the Mankato Gas Company, had lost his life from accidentally inhaling gas that had made its escape in the purifying room of the plant. We have now to supplement that horror with the announcement that Mr. J. A. Presley, Jr., Superintendent of the works, met his fate at that place in a precisely similar manner. The last victim lived five days after discovery.

ERRATIC INCANDESCENT LAMPS.—Detroit, Mich., reports that the incandescent lamps in that city frequently and unexplainably explode. Among other instances we may cite those at the People's Savings Bank and the Antisdell House. The Bank folks have been treated twice to these capers, the last illustration causing serious wounds to a hand of one of the accountants. "Dutton" was quite right in his conclusion anent certain inferences drawn on a "page."

THE CONTRACT AWARDED.—Work on the new purifying, engine and meter house for the Chattanooga Gas Light Company is under way. The building is to be 118 ft. by 63 ft.

SOLD.—The Columbus (Miss.) gas works, sold on the 17th of May, were nominally purchased by Mr. J. R. Ryan. He secured them cheap —$23,500.

TYLER, TEXAS.—Propositions for the establishment of a gas plant at Tyler, Texas, will be opened and considered (to-morrow) by the Gas Committee of the local City Council.

BUSY MANUFACTURERS.—During a recent visit to Philadelphia we were shown through the shops of the Messrs. Wilbraham Bros., by the elder Mr. Wilbraham. Over 20 tons of manufactured iron, in the shape of Baker blowers, pumps, engines and an exhauster were to be sent away on the following day, one of the shipments being intended for Salt Lake City.

BUYING OUT THE UTICA (N. Y.) COMPANY.—In our last we noted that the Equitable Company was about to operate the charter obtained for the city of Utica. They have since succeeded in purchasing three-fourths of the stock of the old Company, paying therefor in the neighborhood of $125 per share, hence the other charter will be pigeonholed. Having secured control, the former directors of the Utica Electric and Gas Company stepped down and out. They were replaced by the following board: Messrs. R. M. C. Graham, Henry Keene, H. Graham, C. D. Harrison, John Fox, J. D. Crimmins, J. P. Miller, A. W. P. Kramer, and E. J. Enfer. President, R. M. C. Graham; Vice-Pres. and Treas., H. Keene; Secy., H. Graham; Supt. A. W. P. Cramer. It is understood that a new holder will be erected, and that the present electric light plant will be duplicated. The old Utica Company was chartered in 1848, and was really the creation of the late Mr. H. H. Fish.

NEW WORKS.—We understand that the Atlantic City (N. J.) Gas and Water Works Company is now constructing a new plant at that point, the former rattle trap collection to be handed over to the junkman when the job is finished. The capacity of the apparatus is placed at 250,000 cu. ft. per diem. The Granger system was chosen.

ELECTION OF DIRECTORS, MUTUAL (N. Y.) COMPANY.—At the annual election of the Mutual Gas Light Company, held May 17, the following Directors were chosen: Messrs. J. P. Kennedy, C. Vanderbilt, G. J. Forrest, J. R. Ford, R. L. Crawford, R. M. Galloway, A. Leary, C. H. Kerner, J. S. Stout, J. Harker, E. S. T. Kennedy, W. K. Vanderbilt, S. Thorne, L. de Bebian, H. Schubart and G. W. Hall.

ANNUAL ELECTION, MONTCLAIR (N. J.) GAS AND WATER COMPANY.—The following were chosen to manage the affairs of this Company for the ensuing year: President, Dr. Love; Secretary, Eugene Vanderpool; Treas., W. H. Baldwin; Supt. Cansbrook was reappointed for another year. The Directors are Messrs. Dodd, Love, Vanderpool, Langstroth, Plum, M. N. Dodd, and Van Vleck.

THE GATE CITY COMPANY.—When W. E. Lawton vanished from New York city he left much debt to remind many of his absence. He was to all intents and purposes the manager of the Gate City Gas Light Company, of Atlanta, Ga., and the stockholders thereof mourned his absence and their loss. However, W. Elliot, who was made temporary receiver of its property, has managed to straighten out matters a bit, and has in consequence been made permanent receiver. He claims that the business is bringing in a profit (over working expenses) of $12,000 a year; to which we will add that if Brother Helme were out of the way the profit would be something more.

GOOD NEWS.—It is with extreme gratification we say to the many friends of the genial and popular Mr. Chas. W. Isbell, Secretary of the Smith & Sayre Manufacturing Company, that that gentleman is rapidly recovering from the severe illness which has kept him a prisoner during the last month or so.

A LINE FROM LAWRENCE, MASS.—When the electricians descended upon the city of Lawrence, they proclaimed that it was all up with the local gas men, but prophets are said to have no standing in their home circles, and the Lawrence dispensers of dynamic lightnings appear to be at present in that period which the late Mr. Longfellow characterized as the part in life "into which some rain must fall." Wet or dry, however, the Lawrence Gas Company (or the leading stockholders thereof) have purchased a controlling interest in the local Brush Company, and 'tis quite likely that the local Edison branch, which now performs the major, if not the entire, part of the public lighting of the city, will soon seek refuge in the Gas Company's haven. Neither of the electric lighting enterprises proved a profitable venture for their respective original controllers, hence we presume the willingness to give up the separate trust. The stockholders who now control the Brush branch have selected the following officers: President, J. R. Simpson; Sec. and Treas., C. J. R. Humphreys; Directors: J. R. Simpson, J. Fallon, Geo. D. Cabot, W. Oswald, G. Davis, R. F. McCartney and C. J. R. Humphreys.

DOWN AGAIN AT NORTH ADAMS, MASS.—Brother Richardson, the man at the helm in North Adams, has decided to reduce the gas rate in that city to $2 per thousand from and after first prox. Prevailing rate, $2.25. In half a decade the price has been cut just 33⅓ per cent.

MADE INSPECTOR.—The appointment made by Mayor Roche, under which Col. Quirk was named as Gas Inspector for the city of Chicago, has been confirmed by the City Council. The Col. qualified in the sum of $10,000.

NORTHAMPTON (MASS.) GAS DOINGS.—The annual meeting of the Northampton Gas Company was held on May 25. The following officers were elected: President, M. M. French; Treasurer, Geo. P. Dickinson; Superintendent, old reliable, D. W. Crafts; Directors, Messrs. John F. Starr, Geo. W. Hubbard, M. M. French, G. P. Dickinson, and D. W. Crafts. The annual report was quite satisfactory. It was decided to make some important main extensions.

THE SANFORD (FLA.) FOLKS AGAIN AT WORK.—The new plant installed at the Sanford gas works is now in successful operation.

NEW COMPANY.—Mr. A. J. Hoopdale intends to secure a gas franchise for Union City, Tenn.

THE AMERICAN GAS LIGHT JOURNAL

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THURSDAY, JUNE 2, 1887.

The Market for Gas Securities.

Consolidated moved up sharply during the fortnight on the understanding that the dividend rate would be increased, but while rumor was right as to the main point, it was wrong in regard to the exact sum. A dividend of 2 per cent. was declared by the executive, which will be noted as an increase of one-half per cent. over the semi-annual payments made since the passage of the $1.25 gas rate law. The bill to relieve the suburban companies, or those in the annexed district, whereby a higher rate for gas may be charged in that section, passed both branches of the Legislature, but at time of writing we are unaware of the Governor's action on the measure. Brooklyn shares are stronger. The Williamsburgh Company has declared a 3 per cent. dividend. The Syracuse (N. Y.) Company has increased its stock to $500,000; and the Mansfield (Ohio) Company's capital has been raised to $90,000. Shares in the New Orleans (La.) Company have declined considerably in quoted value, and are now offered at 70. At that figure these shares look like a purchase.

Gas Stocks.

Quotations by Geo. W. Close, Broker and Dealer in Gas Stocks.

16 WALL ST., NEW YORK CITY.

JUNE 2.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

	Capital.	Par.	Bid	Asked
Consolidated	$35,430,000	100	87	—
Central	440,000	50	30	—
" Scrip	220,000	—	47	57
Equitable	2,000,000	100	126	130
" Bonds	1,000,000	—	113	115
Harlem, Bonds	170,000	—	—	—
Metropolitan, Bonds	658,000	—	110	113
Mutual	3,500,000	100	101	103
" Bonds	1,500,000	1000	101	—
Municipal, Bonds	750,000		—	—
Northern	125,000	50	30	—
" Scrip	108,000			
Yonkers		50	—	80
Richmond Co., S. I.	300,000	50	50	—
" Bonds	12,000	—	—	—
Gas Co's of Brooklyn.				
Brooklyn	2,000,000	25	104	106
Citizens	1,200,000	20	55	57
" S. F. Bonds	320,000	1000	—	103
Fulton Municipal	3,000,000	100	139	141
" Bonds	300,000		—	106
Peoples	1,000,000	10	57	60
" Bonds (5's)	368,000	—	97	—
" " (6's)	94,000	—	100	—
Metropolitan	1,000,000	100	84	86
Nassau	1,000,000	25	104	106
" Ctfs	700,000	1000	100	—
Williamsburgh	1,000,000	50	125	130
" Bonds	1,000,000	—	111	—
Out of Town Gas Companies.				
Boston (Mass.) Gas Co.	2,500,000	500	193	200
Buffalo Mutual, N. Y.	750,000	100	90	95
" Bonds	200,000	1000	95	100
Citizens, Newark	1,000,000	50	—	—
" " Bonds.	45,000	—	—	—
Chicago Gas Co., Ills	5,000,0000	25	142	145
Peoples G. L. & C. Co., Chicago, Ills	3,000,000		29	31
Cincinnati G. & C. Co.	6,000,000	100	184	185
Consolidated, Balt.	6,000,000	100	73½	75
" Bonds	3,600,000		107	107½
Chesapeake, Balt.	1,500,000	100	95	100
"	1,000,000		100	102
Consumers Toronto	1,000,000	50	192	—
Central, S. F., Cal.			86	100
Capital, Sacramento, Cal.			56	58
Hartford, Conn.	750,000	25	140	142
Jersey City	750,000	20	168	—
Laclede, St. Louis, Mo.	1,600,000	100	125	—
Louisville, Ky.	2,570,000	50	130	132
Little Falls, N. Y.	50,000	100	95	100
" Bonds	25,000	—	100	103
Montreal, Canada	2,000,000	100	209	215
New Haven, Conn.		25	193	197
Oakland, Cal.			36½	—
Peoples, Jersey City		—	25	30
" " Bonds.			—	—
Paterson, N. J.		25	90	—
Rochester, N. Y.		50	75	80
St. Louis, Missouri	600,000	50	—	—
San Francisco Gas Co. San Francisco, Cal.	10,000,000	100	59¾	60
Memphis (Tenn.) Gas	750,000	100	—	—
" Bonds.	240,000	100	103	—
Washington, D. C.	2,000,000	20	210	—
Wilmington, Del.		50	200	208
Havana (Cuba) Gas Co.	3,000,000	100	18	20
" Bonds	550,000		102	—

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THE SIEMENS-LUNGREN CO., 21st St. & Washington Av., Phila., Pa.

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All parties making, selling, or using REGENERATIVE GAS LAMPS constructed upon the plan or principle of the Wenham Lamp, as secured to us by Letters Patent of the United States of July 17, 1883, and November 30, 1886, will be held to strict accountability for every violation of the rights so secured to us.

UNITED STATES WENHAM PATENT GAS LIGHT COMPANY.

E. LEB. GARDINER, Secy. JOHN D. CUTTER, President.
NEW YORK, May, 1887.

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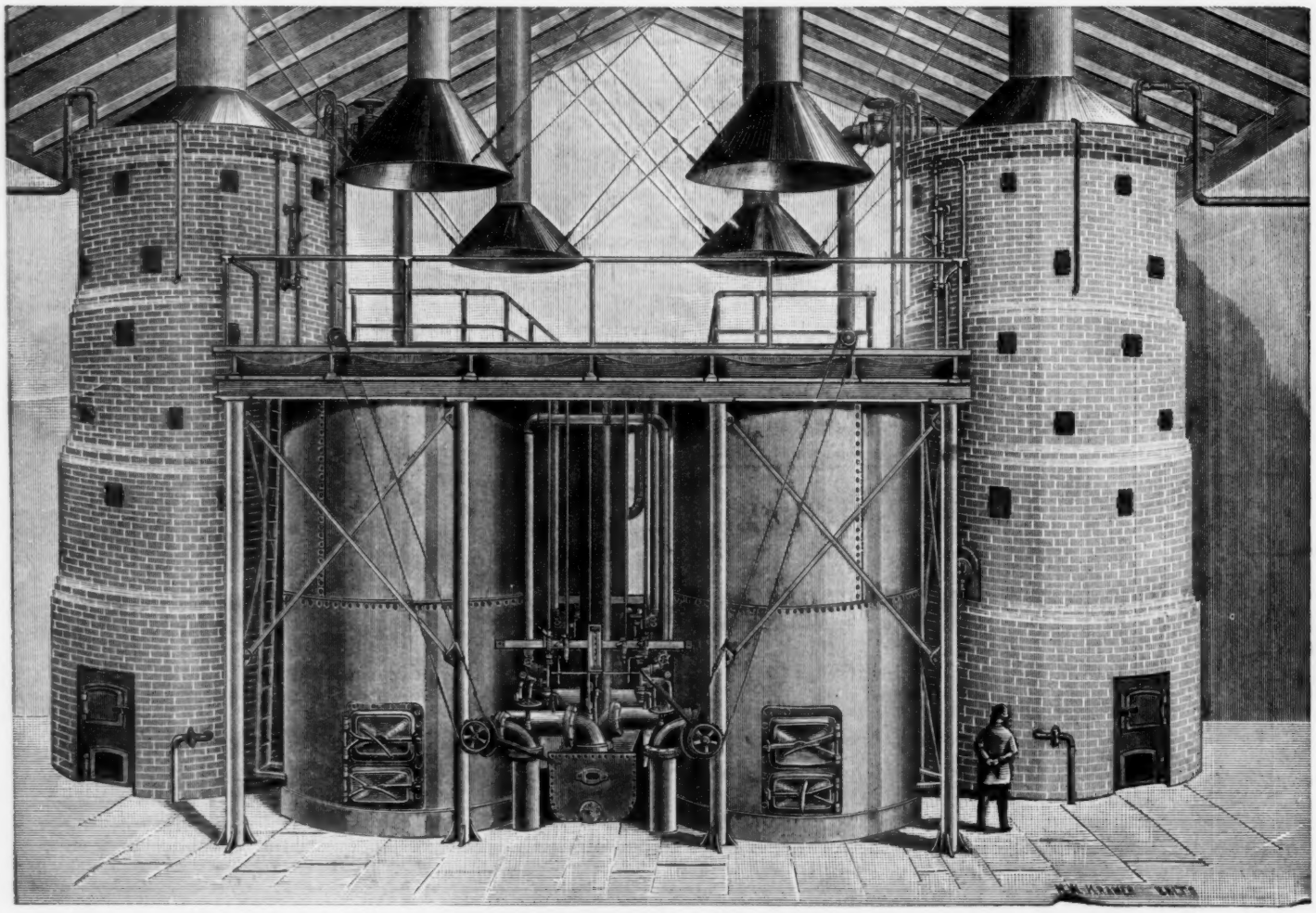

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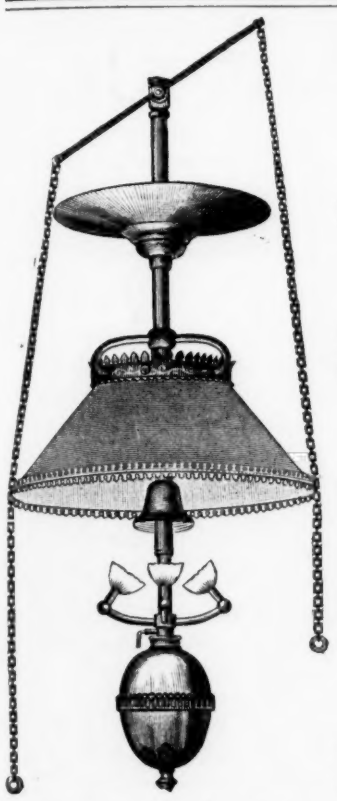

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NOTICE.—Suits are pending in the United States Circuit Courts in Illinois and Pennsylvania against various parties for infringement of our Letters Patent No. 247,925, dated October 4, 1881, and No. 333,862, dated Jauary 5, 1886. The first of these suits has come up for hearing, and an injunction has been granted therein. The second of said suits has not yet been reached for hearing. All persons are cautioned against manufacturing, selling, or using any apparatus or material which infringes our Patents. We intend to prosecute all parties infringing patents owned by us.

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1886

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THEO. FORSTALL, Prest.

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FREDERIC EGNER, Eng. and Supt.

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Messrs. P. H. & F. M. ROOTS, Connersville, Ind.: Gentlemen—Concerning the Exhauster furnished this Company by you last fall, I can say but little—indeed, much need not be said. It simply does its work perfectly, and in a way that inspires confidence that it will not shirk its duty when one's back is turned. If I wanted another 1,000,000 capacity I should try and duplicate our No. 4. Very respectfully,

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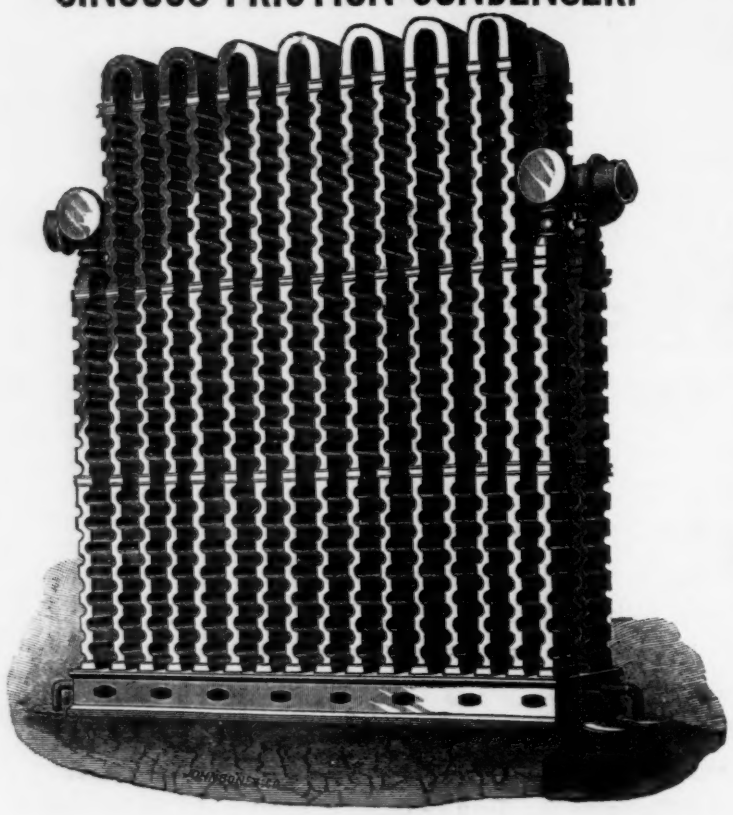

We desire to draw the attention of the gas community to the merits of the SINUOUS FRICTION CONDENSER. Companies intending to introduce new condensers into their works will do well to confer with us and examine plans and estimates before contracting for any other pattern The FRICTION CONDENSER is now in use at the gas works located in the following places:

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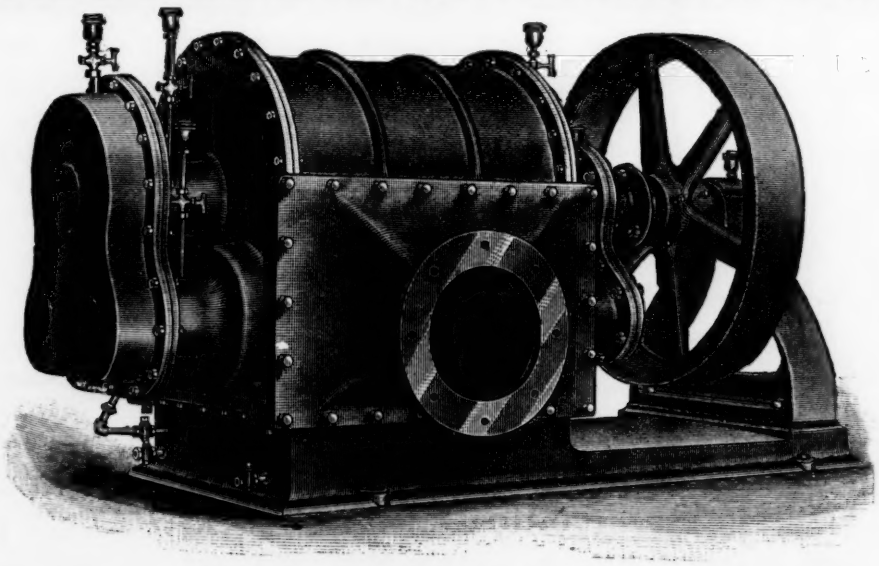

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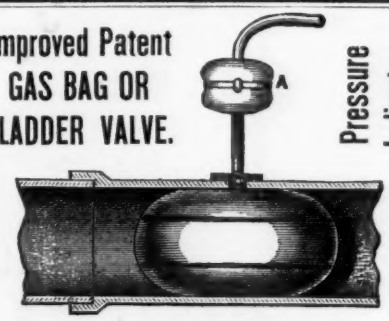

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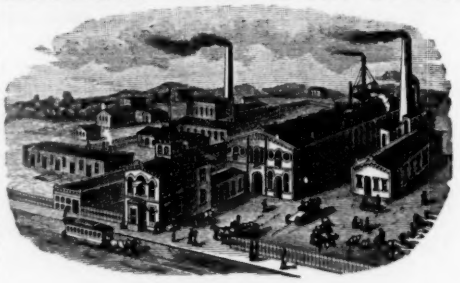

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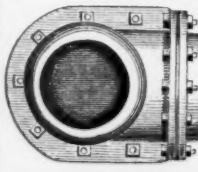

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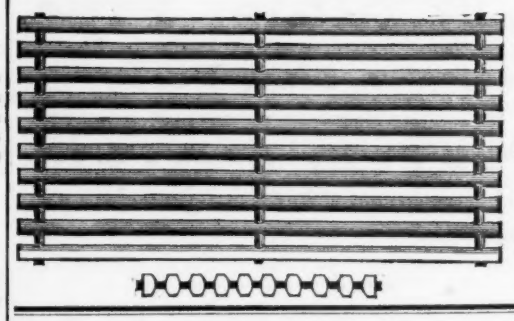

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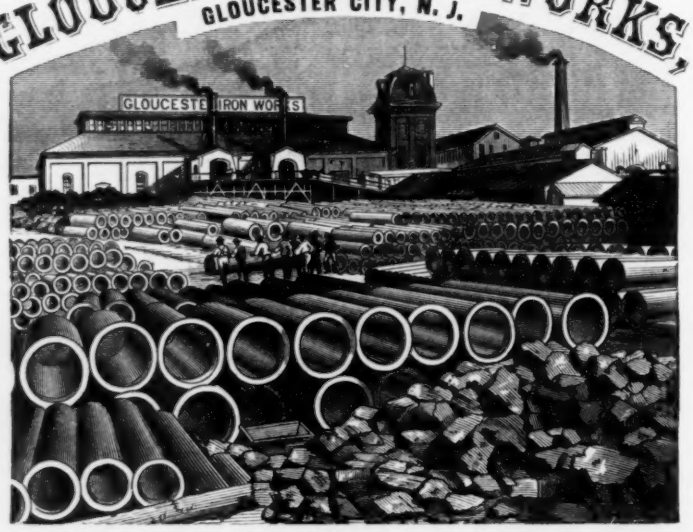

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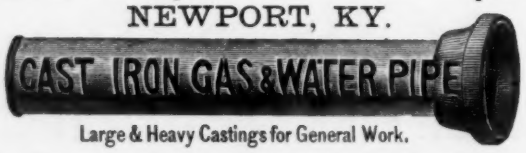

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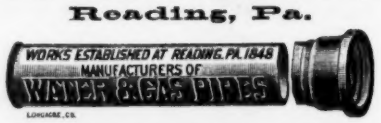

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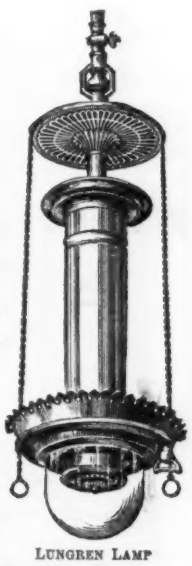

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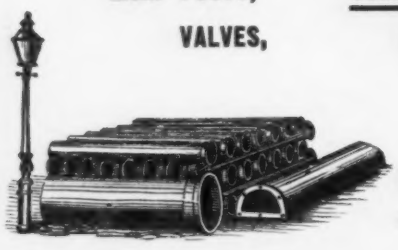

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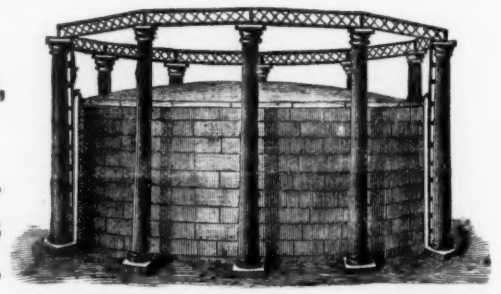

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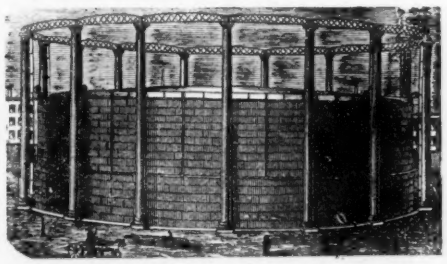

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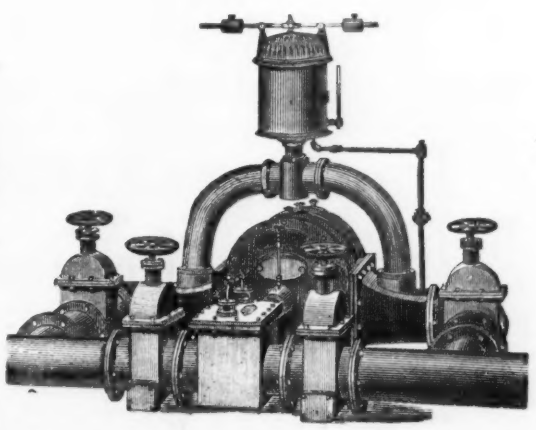

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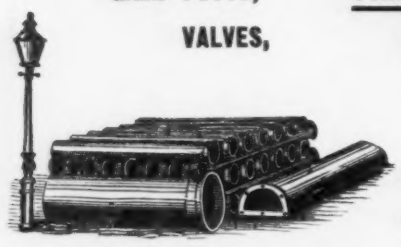

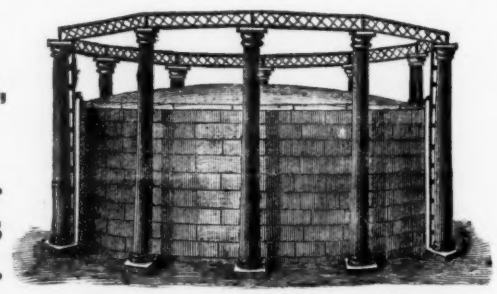

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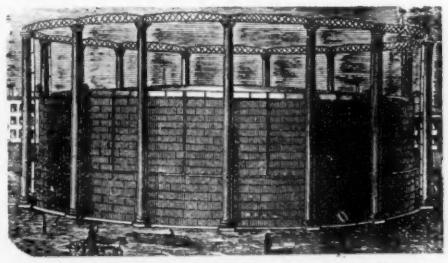

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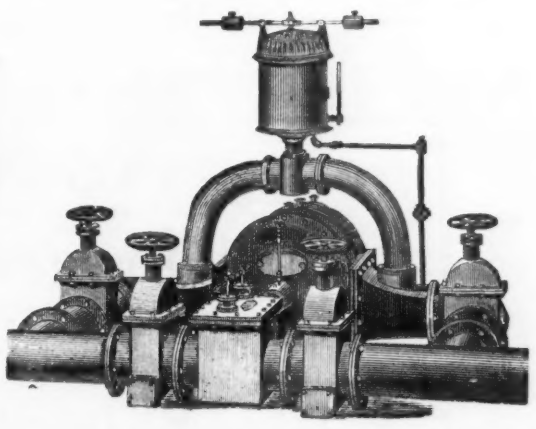

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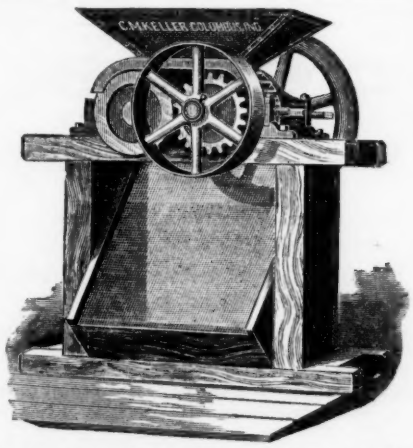

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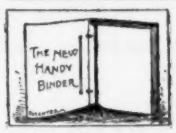

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We use only the very best materials, and employ the most skilled labor, and by our long experience (32 years) and personal supervision of every detail, we feel justified in assuring the public that our goods will give perfect satisfaction. Every Meter emanating from our establishment will bear the State Inspector's Badge, and will be fully warranted by us. Our Annual and Calendar will be sent to Gas Companies upon application.

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THE GOODWIN GAS STOVE AND METER CO.,

1012-18 Filbert St., Phila., 142 Chambers St., N. Y., 76 Dearborn St., Chicago.

Agents, WALDO BROTHERS, 88 Water Street, Boston.

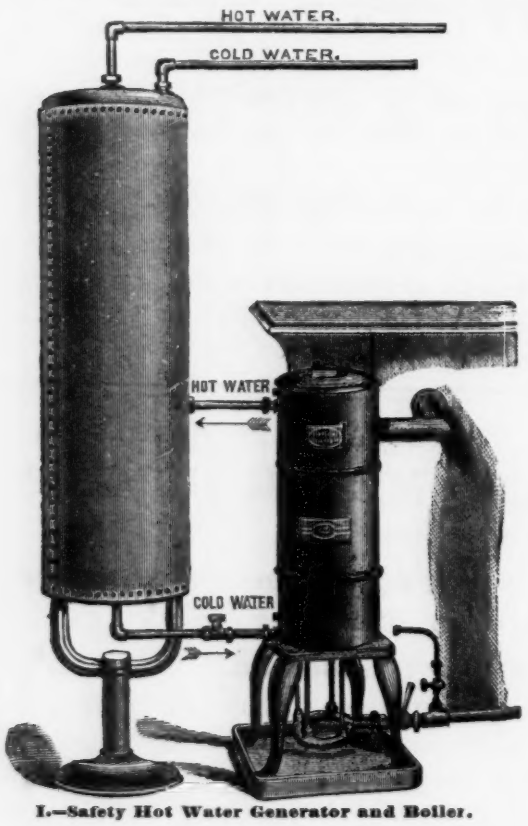
WM. W. GOODWIN, Pres. & Treas.
W. H. MERRICK, Vice-Pres.
LEWIS JONES, Sec.
SAMUEL V. MERRICK, Supt.

SOLE MANUFACTURERS OF THE

G. B. EDWARDS, Mang'r, N. Y.
E. H. B. TWINING, Mang'r, Chicago.
Represented by A. B. STANNARD.

"SUN DIAL" GAS STOVES

The Most Economical, Efficient, and Durable Gas Stove Made.



I.—Safety Hot Water Generator and Boiler.

II.—Gas Cooking Stove No. 8 B.

Safety Hot Water Generator and Boiler.

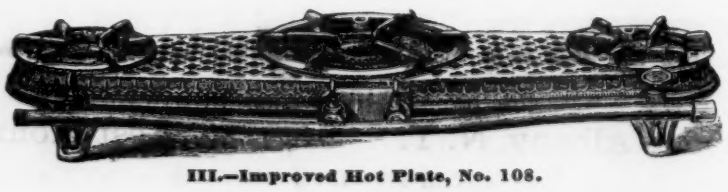
Cut I. represents our Safety Gas Hot Water Generator and Boiler, arranged for home use. This most easy, quick, and economical way of preparing a warm bath, or for heating water for any omestic purpose, entirely supersedes any necessity for the use of ranges or stoves—a great comfort, particularly in hot weather. The boiler being self-filling, as the hot water is drawn off, can never become empty, thus preventing the possibility of any accident.

We beg to call attention to the cast iron pan which is now attached to the legs of the Generator (see illustration). This is to catch the drippings from the Coil, which many persons suppose come from a leak, when in fact they are produced by condensation. This condensation s cause by he hot flame coming in contact with the coil filed with cold water.

New Style Gas Cooking Stove.

Cut II. represents our New Style Cooking Stove. As will be seen, it has an ornamented cast iron base and front, and extension shelves. The oven burner, which is atmospheric (unless otherwise ordered), is of an entirely new and improved pattern (patent applied for). The ovens are of greater capacity than those of the old style. The top, in conjunction with the outlet pipe, is designed to carry off all products of combustion; hence the outlet pipe must be connected with a flue, or the stove will not work properly.

This Stove has 4 boiling burners in top of hot plate. All fittings are nickel plated. We are making this style of Cooking Stove in the following sizes—viz., No. 7 B, No. 8 B, No. 9 B, and No. 10 B.



III.—Improved Hot Plate, No. 108.

New Style Hot Plates.

Cut II. represents our New Style of Hot Plates, of which we are making No. 106 (two small boiling burners), No. 107 (two medium sized boiling burners), and No. 108 (two medium and one large boiling burner). See new Catalogue and Price List for further particulars.